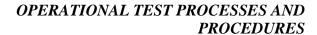*BY ORDER OF THE COMMANDER*
AIR FORCE OPERATIONAL TEST AND
EVALUATION CENTER (AFOTEC)

AIR FORCE OPERATIONAL TESTING AND
EVALUATION CENTER MANUAL 99-101

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Test and Evaluation

OPERATIONAL TEST PROCESSES AND
PROCEDURES

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The AFOTECMAN 99-101 provides organizationally specific guidance and procedures for planning, executing, and reporting operational test and evaluation (OT&E) and related activities. The AFOTECMAN 99-101 is to be used in conjunction with policies, directives, and instructions contained in Department of Defense (DoD) Directive (DODD) 5000.01, *The Defense Acquisition System*; DoD Instruction (DODI) 5000.02, *Operation of the Defense Acquisition System*; Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01H, *Joint Capabilities Integration and Development System*; CJCSI 6212.01E, *Interoperability and Supportability of Information Technology and National Security Systems*; Air Force Policy Directive (AFPD) 99-1, *Test and Evaluation Process*; Air Force Instruction (AFI) 99-103, *Capabilities Based Test and Evaluation*; Air Force Mission Directive (AFMD) 14, *Air Force Operational Test and Evaluation Center*; and the *AFOTEC OT&E Guide*. This manual assumes a fundamental understanding of the DoD and Air Force weapon system acquisition processes. This manual does not repeat higher headquarters policy and direction and the higher headquarters guidance should be consulted first to understand the roles and missions of AFOTEC. The AFOTECMAN 99-101 outlines the AFOTEC Commander's (AFOTEC/CC) processes, procedures, checklists, and techniques of the various phases of OT&E. The manual applies to all AFOTEC directorates, detachments (Dets), and operating locations (OLs). This publication does not apply to ANG or AFRC. Refer recommended changes and questions about this publication to AFOTEC Operations Directorate (AFOTEC/A-3) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate chain of command including the publications/forms manager. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AF Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition

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SUMMARY OF CHANGES

This manual has been significantly reduced in size and content, covering only an overview of the processes and procedures required for OT&E. It must be read in its entirety and it should be used in conjunction with the *AFOTEC OT&E Guide* that defines the mandatory processes and procedures in detail.

Chapter 1

INTRODUCTION

Section 1A—Overview

1.1. Purpose. This manual provides mandatory procedures for AFOTEC personnel on accomplishing OT&E in support of the Air Force acquisition process. Requests for deviations to this manual should be sent to AFOTEC/A-3 for AFOTEC/CC approval.

1.1.1. Interim changes will be used to publish changes to the manual. In addition to the procedures on the title page, proposed changes to the manual can be submitted via request to the AFOTEC/A-3 workflow e-mail account. Operational test information files are used to provide immediate notice of updated information to AFOTEC that is not captured in formal policy.

1.1.2. Use this manual in conjunction with the *AFOTEC OT&E Guide*, as well as, checklists, guides, templates, etc., on the AFOTEC Intranet. Throughout the manual, you can find references to documents located on the AFOTEC Intranet (see paragraph **1.10** for additional info). A working knowledge of the AFOTEC organization is assumed.

1.1.3. Terms of Reference. To effectively execute the AFOTEC/CC's procedures for planning, executing, and reporting Integrated Test and Evaluation (IT&E) and related activities, a common understanding of terms is essential. For the purposes of the manual, the term operational test (OT) includes initial OT&E (IOT&E), qualification OT&E (QOT&E), follow-on OT&E (FOT&E), and multiservice OT&E (MOT&E), as well as early operational assessment (EOA), operational assessment (OA), and operational utility evaluation (OUE). Operational utility assessments (OUA) are used to provide information for innovation programs.

Section 1B—AFOTEC Processes

1.2. Early Influence. Early Influence is an approach adopted by AFOTEC for engaging and teaming with the user and acquisition communities early in the acquisition process in order to reduce program risk and support delivering mission capable systems to the warfighter. In addition, early influence enables AFOTEC to identify programs for possible involvement. AFOTEC/A-3 will execute programmatic activities (assess AF equity, monitor program status, etc.) during pre-involvement. Once an involvement decision has been made, the assigned Det takes the lead for managing the programmatics.

1.3. Integrated Test and Evaluation. The objective of IT&E is to 1) maximize opportunities to collect operationally relevant data, 2) optimize use of limited test and evaluation (T&E) time and resources, and 3) identify problems of an operational nature at the earliest opportunity. IT&E involves collecting OT&E-relevant data from appropriate developmental test (DT) events with a focus on achieving both DT and OT objectives. Every effort will be made to avoid collection of duplicate data by combining test events and consolidating data requirements to reduce redundant testing during follow-on IT&E and/or OT events. The responsible test organization (RTO) will perform the tests while AFOTEC collects data points to supplement

OT&E data. If AFOTEC determines the data is operationally relevant and remains unaltered by the developing contractor as the program matures, AFOTEC has the option to carry this data forward to dedicated OT&E. The integrated test team (ITT) members will have the option to review contractor test plans and procedures and provide comments to the system program office (SPO)/program manager (PM). If possible, integrated test modifications that do not significantly impact schedule or cost will be negotiated by the SPO/PM with the contractor, and the appropriate changes for the development T&E (DT&E) test scenarios will be incorporated to partially satisfy or to collect data against an operational requirement. IT&E requires diligence and a cradle-to-grave focus from all AFOTEC personnel. Early and continuous collaboration between the warfighter, acquisition, and T&E communities go a long way to increase programmatic confidence (e.g., schedule, requirements stability, funding, and testability).

1.4. Office of the Secretary of Defense T&E Oversight List. AFOTEC is the operational test agency (OTA) for all Air Force programs on the Office of the Secretary of Defense (OSD) T&E Oversight List until OT&E is completed. Any program still on oversight after this fact belongs to the owning major command (MAJCOM). Detachment Commanders (Det/CCs), test directors (TDs), and technical advisors are responsible for knowing the oversight status of their programs and ensuring the current status is updated on the AFOTEC Intranet (see paragraph **1.10** for additional info).

1.5. Program Support by AFOTEC Liaison Officers. Liaison Officers (LNOs) can greatly benefit AFOTEC by engaging with SPOs, Air Force Materiel Command (AFMC) and Air Force Space Command (AFSPC) product centers, MAJCOMs, and other key agencies (e.g., Director, OT&E (DOT&E), Air Force T&E (AF/TE), Joint Interoperability Test Command, test ranges, etc.) early in the requirements, alternatives, and acquisition processes. The LNOs should support early program activities by discovering emerging requirements and new acquisition programs, and by obtaining key program documentation. By providing program support, LNOs ensure AFOTEC's planning considerations are addressed, external offices are educated about the benefits of AFOTEC's involvement, and communications are enhanced between other organizations and AFOTEC. The *AFOTEC Program Manager's Operational Test Toolkit* provides a value-added product for AFOTEC personnel to leave behind with SPO and MAJCOM personnel.

1.5.1. AFOTEC LNO. The AFOTEC LNOs co-located with AFMC and AFSPC product centers or the Pentagon, act as on-scene representative of the AFOTEC/CC and fulfill a critical role in the AFOTEC early influence process. These liaison officers accomplish the following actions:

1.5.1.1. Interface directly with their assigned product center counterpart and actively participate in the acquisition plan process and test strategy formulation as directed via AFOTEC tasking orders. The LNO should actively look for the following information: new program basics (such as program name, description and acquisition strategies), RTO, other points of contact (POCs), related program documentation, program reviews and forecasts, and other information that may be helpful to support tasking order (TO) preparation and establish collaborative IT&E planning efforts. Additional program information such as program priorities, requirements documents, Concept of Operations (CONOPS), operating plans, information support plans (ISP) and tactics, techniques, and procedures (TTP) should be obtained as available.

1.5.1.2. Notify AFOTEC/CC, AFOTEC/A-3, and Dets of emerging projects/programs.

1.5.1.3. Filter project/program information and recommend involvement initiation when appropriate.

1.5.1.4. Notify AFOTEC/CC, AFOTEC/A-3 and Dets of issues of interest and key meetings requiring AFOTEC representation.

1.5.1.5. Attend SPO/product center meetings addressing program development.

1.5.1.6. Clarify AFOTEC policy and positions as required and refer questions to appropriate AFOTEC Det or headquarters (HQ) staff.

1.6. Staffing and Coordination. Many different documents originating both inside and outside AFOTEC will require staff and executive review. AFOTEC/CC requires prompt information update and exchange for OT&E activities. The HQ staff POC is responsible for the coordination of a product within the HQ and with external agencies, as applicable; adjudicating HQ and external comments to a product, as applicable; staffing in Task Management Tool (TMT) for appropriate 2 Letter (2-Ltr) and Command Staff (AFOTEC/CS) coordination, and modifying the product for final signature and subsequent publishing. Det/CCs will provide programmatic updates at monthly stand-up or staff meetings when staff packages do not support time constraints. These updates serve to quickly inform the AFOTEC/CS and key personnel; they do not negate the requirement for officially staffed documents.

1.7. External Briefings. The AFOTEC/CC or AFOTEC/ED is the release authority for all external briefings. DOT&E requires a test concept briefing for all oversight programs at least 180 days prior to test start, and delivery of the test plan at least 60 days prior to test start. The associated final test plan briefing will be coordinated through Commanders Action Group (AFOTEC/CCX) before submittal to DOT&E. Final report briefings are provided to HQ USAF staff and the OSD as requested. Remember, when presenting an AFOTEC-approved briefing externally any changes must be approved by the release authority. AFOTEC/CCX will coordinate all external briefings (e.g. AF/TE and DOT&E).

1.8. Meeting Attendance. OT planners attend various acquisition meetings either in person, via teleconference, or via video teleconference. Typical meetings include integrated product team meetings, IT&E working group meetings, analysis of alternatives (AoA) meetings, ITT meetings, etc. Depending on the program, the titles of these meetings may vary. The common thread is that they are usually called by the SPO director or staff, or a developing contractor. Test team members should actively monitor SPO activities for meetings that could be of benefit to test planning activities. Taking an active role and seeking out information on SPO activities is beneficial and can prevent surprises. Collateral visit requests are processed through AFOTEC Information Protection (AFOTEC/CVI). Special Access Program (SAP) visit requests are processed through Special Access Programs Division (AFOTEC/A-3Z) Security. Special Compartmented Information (SCI) visit requests are processed through Intelligence Division (AFOTEC/A-2N).

1.9. Security Management. AFOTEC/CVI and Det security mangers assist test team members with security issues involving information protection, facilities, and equipment policy. Identify appropriate security measures for the conduct of OT&E efforts for Information, Industrial, Personnel, Physical and Operational Security, and Anti-terrorism/Force Protection. OT&E

planning and reporting must consider these security elements during the conduct of OT&E. Security elements to consider during OT&E planning and reporting are:

1.9.1. Information Protection. AFOTEC/CVI serves as the HQ point of contact for information protection (IP). The AFOTEC Vice Commander (AFOTEC/CV) and each Det/CC are ultimately responsible for the oversight and execution of security policy. IP involves safeguarding any data/information that potentially reveals US vulnerabilities, capabilities, capability gaps, or any data/information that has been determined, in the interests of National Security, to require a specific degree of protection against unauthorized disclosure, in which unauthorized disclosure could cause exceptionally grave or serious damage to the US Government.

1.9.2. Documentation Markings. The proper marking of a classified document is the specific responsibility of the original or derivative classifier (DC) (i.e., the author or originator of the information). DCs shall refer to the source documents, security classification guides (SCG), or other guidance issued by the original classification authority (OCA) when determining the marking to apply. The criteria for classifying information is defined in AFI 31-401, *Information Security Program Management*, AFI 31-401 AFOTECSup, *The AFOTEC Information Security Program*, DoD Manual (DODM) 5200.1 V1, *DoD Information Security Program: Overview, Classification, and Declassification;* DODM 5200.1 V2, *DoD Information Security Program: Marking of Classified Information;* DODM 5200.1 V3, *DoD Information Security Program: Protection of Classified Information;* DODM 5200.1 V4, *DoD Information Security Program: Controlled Unclassified Information (CUI); Information Security Oversight Office (ISOO) Marking Classified National Security Information Manual; Intelligence Community Authorized Classification and Control Markings (CAPCO) Register and Manual*; *USAF Security Marking Guide for Special Access Programs*; and applicable SCGs.

1.9.3. Defense Technical Information Center. The Defense Technical Information Center (DTIC) assists DoD component officials in determining whether their existing security classification guidance may be relevant to their systems, programs, plans, or projects. This site provides information on current guides available and is restricted to registered users of DTIC Online Access Controlled. The AFOTEC/CVI staff are registered users and can obtain copies of a SCG, upon request. Det Security Managers can also obtain copies from the SPO. These guide(s) should be read and understood by all test team members, prior to the conduct of any OT&E efforts. Test team members should be aware that AFOTEC/CC does not have OCA. In the absence of a SCG, or if the SCG does not adequately cover capabilities, vulnerabilities, weaknesses and limitations, test team members should contact AFOTEC/CVI regarding the OCA process.

1.9.4. Access to classified information. There are two basic prerequisites required for access to classified information: possession of a security clearance commensurate with the level of the classified information and a valid "need to know" for the information. In some cases, personnel may require special access to North Atlantic Treaty Organization (NATO), Restricted Data (RD), Formerly RD (FRD), Critical Nuclear Weapons Design Information (CNWDI), and Nuclear Command and Control Extremely Sensitive Information (NC2-ESI). Access to special category programs must be approved in writing by AFOTEC/CV or AFOTEC, Chief, Information Protection. Access to store special category material must also

be approved in writing by AFOTEC, Chief, Information Protection. AFOTEC/CVI is responsible for the management of NATO, RD, FRD, CNWDI, and NC2-ESI programs.

1.9.5. Derivative Classifier. AFOTEC personnel who have to develop classified material and/or have a Secure Internet Protocol Router Network (SIPRNet) account, must be appointed as a DC. Appointments must be made in writing by a Director or Det/CC and coordinated/approved by AFOTEC/CVI and/or Det Security Manager (SM). DCs are mandated to receive initial training and then maintain training every two-years, thereafter. AFOTEC/CVI and/or Det SM are responsible for administering the training.

1.9.6. Operations Security. The AFOTEC Operations Security (OPSEC) Plan and Critical Information List, identifies OPSEC factors and critical elements of information test teams should consider in OT&E planning and reporting. AFOTEC/CVI is the primary AFOTEC OPSEC program manager. (Contact AFOTEC/A-3Z Security for SAP related OPSEC issues/concerns. Contact AFOTEC/A-2N for SCI related OPSEC issues/concerns.)

1.9.7. Special Access Programs. Access to SAPs are managed by AFOTEC/A-3Z and impose controls beyond those normally required for Confidential, Secret, or Top Secret information. AFOTEC has one dedicated Program Security Officer that resides at Kirtland Air Force Base, New Mexico. The utilization of an Area Program Security Officer at each Det and/or operating location (OL) for paperwork approval (i.e., Standard Operating Procedures, OPSEC Plan, Security Incident Reports, Facility Accreditations Letters, Fixed Facility Checklists, Memorandum of Agreement (MOA), Memorandum of Understanding (MOU), Co-utilization Agreements, Self-inspection Reports, Waiver Letters, Equipment Approval Letters, SAP Form 6s, *Notification of Foreign Travel*, Master System Security Plans, Authority to Operate (ATO) Letters, System Security Plans SAP Form 16s, *Word Processor and Personal Computer Data Sheet*, SAP Form 26s, *Equipment/Software Movement Request,* and Software Approval Requests) is permitted; however, paperwork must be pre-coordinated with AFOTEC/A-3Z Security and/or information technology (IT) personnel.   This type of structure will ensure the integrity of AFOTEC involvement in SAP programs and our facilities are maintained. (Contact AFOTEC/A-3Z for information pertaining to SAPs.)

1.9.8. Special Compartmented Information. Access to SCI is managed by AFOTEC/A-2N and SCI imposes controls on intelligence information beyond those normally required for collateral Confidential, Secret, or Top Secret information. (Contact AFOTEC/A-2N for information pertaining to SCI.)

1.10. AFOTEC Intranet. The AFOTEC Intranet is a web-based internal network that encompasses both Non-Secure Internet Protocol Router Network (NIPRNet) and SIPRNet. It integrates a variety of data sources and applications into a centralized information portal, providing a single source for DoD, Air Force, and AFOTEC policy and guidance. The NIPRNet side of the AFOTEC Intranet is the primary repository for all test program documentation (unclassified). Any classified documentation will be stored on the SIPRNet side of the AFOTEC Intranet; documentation for SAP will be stored on a stand-alone system, not SIPRNet. These sites contain general support information, specialized directorate information, and program specific data, and allow AFOTEC PMs, test teams, and deployed test personnel to submit reports and documents throughout the life of the program. These sites also allow AFOTEC's senior leaders to have greater insight to upcoming events and prompt notification of significant

occurrences, to include safety and mishap issues involving AFOTEC programs, personnel, or resources.

1.11. AFOTEC Test Program Applications. The overall objectives of AFOTEC Test Program Applications (ATPA) are to support effective and efficient management of AFOTEC test programs. For each test program, the TD or PM who owns the program is responsible for maintaining current, complete and accurate program information and documents (externally and internally generated) in Test Program Management (TPM) application. TPM is used to record and maintain vital test program information (scheduled activities, current status, program issues, etc.) AFOTEC/A-3 is responsible for posting all AFOTEC/CS approved documents to the program's TPM page and the owning Det will post all other program documents. The Det TD will accomplish a monthly certification of their programs' TPM pages for currency and accuracy. The TMT application is used to coordinate specific test program documents, including TOs, T&E Strategies (TESs), T&E Master Plans (TEMPs), Test Plans, Test Reports, briefings, etc. AFOTEC/A-3 is responsible for staffing of all external program documents for 2-Ltr coordination and all program documents for AFOTEC/CS review and approval.

1.12. Training. All formal training for AFOTEC is accomplished and managed by AFOTEC's Training Division. Your unit training monitor helps manage training through the AFOTEC Training Management. Supervisors are responsible for ensuring all personnel (officer, enlisted, and civilian) in-process with their respective training manager. During in-processing, AFOTEC members will receive their individual training plan (letter of Xs) and career development training plan. Contact your training monitor for your training status including completed, required, and projected training.

1.13. AFOTEC HQ Standardization and Evaluation. Standardization and Evaluation (Stan/Eval) is vital to AFOTEC's operational test mission and is continuously executed through a variety of AFOTEC operational test processes, procedures, tools and reviews designed to enable efficient development of products and effective feedback. AFOTEC/A-3 is responsible for leading overall development, management, and execution of AFOTEC operational test program Stan/Eval products, processes, procedures, tools and reviews with support from AFOTEC/A-2/9, AFOTEC/A-5/8, and AFOTEC/SE. Additionally, successful execution of Stan/Eval requires AFOTEC A-2/9, AFOTEC/A-5/8, and AFOTEC/SE lead development, management and execution of specific areas of Stan/Eval.

1.13.1. Roles and Responsibilities. AFOTEC/A-2/9 ensures technical adequacy, test design, test measures development, relevant threat environments, data collection methods, scoring, analysis, modeling and simulation, human factors analysis, and test capability accreditation. AFOTEC/A-3 ensures operational sufficiency, test design, end-product quality, credibility, effective feedback, and timeliness of all internal and external operational test program plans, reports and program related documentation. AFOTEC/A-5/8 ensures compliance with policy, accurate development of test resource plans, sufficiency of test resources, requirements review, and test infrastructure. AFOTEC/SE advises on systems safety requirements and analysis and ensures compliance with Environmental, Safety, and Occupational Health (ESOH) standards during test planning and execution.

1.14. Technical and Scientific Support. OT planners may identify technical needs required to perform specific tasks and should become aware of any test support shortfalls that may exist as the first test resource plan (TRP) is being developed. OT planners should explore the availability

of technical support from AFOTEC/A-2/9, the Det technical advisor, and other external military organizations or government agencies. AFOTEC/A-2/9 provides technical and scientific support in the areas of test methods, analysis techniques, human factors, modeling and simulation (M&S), man-made and natural threats, and reliability, maintainability, and availability. AFOTEC/A-2/9 preserves technical adequacy and credibility through ensuring feasible test plans and test reports, analytically-sound measures and methods, and supportable conclusions for OT&E. AFOTEC/A-2/9 is responsible for providing test teams with M&S guidance. The Test Infrastructure Division (AFOTEC/A-5R) and (Long Range Investments Division (AFOTEC/A8R) for Nevada Test and Training Range (NTTR)) identifies and advocates the development of solutions to test capability shortfalls (open air range, ground test facilities, instrumentation, targets, and M&S) to support test teams. **Note:** All new AFOTEC-funded contractor efforts must be approved in writing by the AFOTEC/CV.

1.15. Lessons Learned. Continuous improvement of AFOTEC's products and business practices is facilitated through shared learning experiences. Lessons Learned (L2) are uncovered in all areas of planning, execution, reporting, and closeout and must be collected after each test activity. There are three types of L2: Topical (specific area of interest); After-Action (hot wash or post-activity event); and Event Driven (tied to a specific event). The AFOTEC L2 process has four steps: Collection, Validation, Dissemination, and Resolution. For more specific detail, direction or additional assistance, refer to the Lessons Learned community on the AFOTEC SharePoint or contact AFOTEC/A-2/9 (L2 Manager).

1.16. Risk Management. AFOTEC uses Risk Management (RM) throughout a program. As defined in AFI 90-802, *Risk Management*, RM is a continuous process designed to detect, assess, and control risk while enhancing performance and maximizing combat capabilities. RM enables all personnel to maximize operational capabilities while limiting all dimensions of risk by applying a simple, systematic process. Appropriate use of RM increases both our organizational and individual ability to accomplish the mission, whether planning a test, collecting data, executing test activities, or reviewing test data. AFOTEC/SE and Det safety personnel will assist the TD in applying the RM process to their programs and will facilitate the evaluation of system hazards that may affect the test.

1.17. Rapid Test Considerations. The need for rapid response stems from a rapidly evolving warfighting environment and the acquisition community's quick response to today's threats through various approaches. These approaches could include Joint Concept Technology Demonstration (JCTD) and formal Urgent Operational Need (UON) acquisitions. From AFOTEC's perspective, rapid acquisition means short-notice, rapid response and right-sizing planning timelines without sacrificing OT&E rigor. The "Rapid Test" process formally recognizes the need, intent, and capability to respond quickly. The Rapid Test capability emphasizes speed and flexibility. However, a standardized process will be applied.

Chapter 2

AFOTEC ACTIVITIES SUPPORTING MILESTONE A

Section 2A—Overview

2.1. Introduction. The Det/CC, assisted by the Det technical advisor, is responsible for test team activities and products leading up to Milestone (MS) A. Pre-MS A early influence activities afford AFOTEC the greatest opportunity to influence emerging capabilities; it formalizes AFOTEC program involvement and provides standardized methodologies for influencing capability requirements development, program acquisition strategies, and T&E strategies and plans. Early influence leads to identification and correction of issues that might proliferate or become more difficult to solve later in the acquisition process. The Det, an LNO, or AFOTEC/A-3 gathers program status, programmatic, and operational information relevant to each program. During information gathering there may be additional considerations to address such as multi-service involvement, non-traditional innovation efforts, or urgent warfighter needs.

2.1.1. Depending on program maturity a formal involvement determination may be initiated. The involvement determination process culminates with a signed involvement letter (IL) and TO which defines the scope of involvement, the resource allocation bounds, and team responsibilities during early influence, planning, execution, and reporting including the need for an OL and required deliverables to be produced. The signed IL is transmitted to AF/TE and other program stakeholders to document AFOTEC's formal involvement or non-involvement. The IL and TO may be executed concurrently or separately based on program schedule requirements.

2.1.2. During pre-MS A early influence, the Det, an LNO, and/or AFOTEC/A-3 investigates current and future concepts of operations; gathers and assesses capabilities requirements and risk assessment information (capability gaps and programming) for application to IT&E; coordinates with other elements of the Air Force requirements and acquisition community to include MAJCOMs, Air Staff, Air Force Requirements Oversight Council (AFROC), HQ AFMC, HQ AFSPC, product centers, or laboratories; monitors understanding of scenarios used for defense planning; coordinates with the joint community; and obtains the results of technology demonstrations. The early work is accomplished to maintain cognizance of the acquisition and operational environments to support IT&E planning and to anticipate the nature and extent of OT&E involvement in future programs (specifically, to support early acquisition involvement in high performance teams (HPT), requirement strategy review (RSR), initial capabilities document (ICD), course of action (COA), technology development strategy (TDS), TES, functional solution analysis/analysis of materiel approaches, and AoA).

2.1.3. AFOTEC/A-3 and the Det TD make first contact with the SPO in order to establish communication between the acquisition PM and developmental test personnel. The TD and AFOTEC/A-3 should review the acquisition process for the program using the AFOTEC-developed *PM's Operational Test Toolkit*. The TD should be sure to discuss the readiness to test approach that will be applied for the program. Following initial contact, the TD is kept apprised of program developments by AFOTEC/A-3. The TD provides overall credibility to the early influence process while the AFOTEC/A-3 personnel provide continuity on the

program. Activities for innovation programs and UONs should follow a similar path, but are expedited to accommodate the project schedule.

Section 2B—External Support Documents

2.2. Ongoing Activities. During the life of an OT&E program, several activities are done repeatedly. AFOTEC's participation may vary depending on the situation and level of involvement. Some of these activities include reviewing and commenting on various documents, developing and updating TEMP and Life Cycle Management Plans (LCMP), attending meetings, maintaining the AFOTEC Intranets, tracking system certification and readiness status, inputting lessons learned, obtaining contractor technical services, and presenting briefings. AFOTEC helps prepare key requirements and acquisition documents so that IT&E concerns are incorporated into the acquisition process. AFOTEC/A-3 manages the review process for all program documents. Some of the key requirements and acquisition documents are discussed in the following paragraphs.

2.3. Initial Capabilities Document. The ICD identifies the need for a materiel solution. The ICD supports the AoA, the TDS, the MS A acquisition decision, and subsequent technology development activities. The ICD defines the capability gap in terms of the functional area, the relevant range of military operations, desired effects, and time. The ICD is normally developed while the program is still in early influence and forms the foundation for initial test design (ITD).

2.4. Acquisition Decision Memorandum. The Acquisition Decision Memorandum (ADM) documents the decisions made and exit criteria established for the materiel development decision (MDD). The ADM specifies what is to be done prior to the MS A decision. Operational testers need to be cognizant of and implement the decisions documented in the ADM. Det/CCs ensure ADMs are sent to AFOTEC/A-3 for 2-Ltr coordination and AFOTEC/CS review. The AFOTEC/CC or Executive Director (AFOTEC/ED) may approve the ADMs based on the program's acquisition category (ACAT) level.

2.5. Preliminary Concept of Operations. To support the ICD, the user produces a preliminary CONOPS that defines notional system employment and support procedures. Standards are specified for deployment, organization, command and control, basing, and support. This gives an understanding of how the user plans to employ the system which is used to help develop the ITD. The CONOPS will continue to develop throughout the acquisition cycle as the system technologies mature and the enabling concept is defined.

2.6. Analysis of Alternatives. An AoA is conducted following an MDD and validation of the ICD. The focus of the AoA is to refine the selected concept documented in the validated ICD. The AoA assesses the critical technologies associated with these concepts, including technology maturity, technology risk, and, if necessary, technology maturation and demonstration needs. This analysis aids decision-makers in judging whether or not any of the alternatives offer sufficient benefit that is worth the cost. AFOTEC's participation in the AoA process can afford insight into the CONOPS, mission tasks, and model scenarios, as well as leveraging information for early influence and initial test design activities. The responsible Det and/or AFOTEC/A-3 may periodically provide input to the AoA Study Plan (AoA linkage to the requirements document and test plan) that is provided to the AFROC. See AFI 10-601, *Capabilities-Based Requirements Development,* and the AFMC Office of Aerospace Studies website located at

http://www.oas.kirtland.af.mil for more information on AoAs. AFOTEC/A-3 has developed a checklist to assist in reviewing AoA documents.

2.7. Course of Action. The COA is a planning and decision process that culminates in a MAJCOM commander decision. The COA includes a series of alternative program choices developed by the Milestone Decision Authority (MDA) or a designate, in conjunction with the user, and presented to a MAJCOM commander. Once a specific COA is selected, it becomes a formal agreement between the MDA and the MAJCOM commander that clearly articulates the performance, schedule, and cost expectations of the program. The COA provides the basis for the TDS during the Technology Development Phase and the basis for the LCMP. The COA is designed to address differences in expectations up front and to develop a common understanding and agreement on program expectations. Approval at the MAJCOM commander/MDA level of the selected COA ensures agreement among leadership on program expectations – performance (or incremental performance) at the specified cost and schedule. For each alternative program choice, the testers (developmental and operational) provide a preliminary TES for the alternative. The preliminary TES for the selected alternative serves as the basis for the final TES, the TEMP, or the LCMP as applicable in support of the MS decision.

2.8. Modeling & Simulation Support Plan. The Modeling & Simulation Support Plan (MSSP), developed by the SPO, captures all the M&S requirements over the life cycle of an acquisition program including those for DT and OT. TDs need to be aware of the MSSP and ensure OT M&S requirements identified are included as early as possible in order to be a part of the SPO's M&S funding strategy (the PM is responsible for funding required M&S resources). Contact AFOTEC/A-2/9 if any questions arise concerning M&S. Reference DODI 5000.02 and AFI 16-1002, *Modeling and Simulation (M&S) Support to Acquisition*.

2.9. Life Cycle Management Plan. The LCMP integrates the acquisition and sustainment strategy(ies) and provides all support requirements of a system, subsystem, or major end item. It references the systems engineering plan, which is designed to ensure supportability considerations are implemented during the design, development, production and sustainment of a weapon system. An effective product support strategy establishes the initial foundation for the collaboration of acquisition and sustainment planning concepts and allows for the eventual transfer of program management responsibility from the Program Executive Office (PEO) portfolio to the Air Force Sustainment Center portfolio. If there is not a TES for the program, the LCMP should contain all of the information that would have been contained in the TES to provide integrated test planning to minimize test event duplication and streamline the process. If there is both an LCMP and a TES for the program, the LCMP can contain a summary of the test program as documented in the TES.

2.10. Information Support Plans. The ISP is developed by the SPO for all ACAT and non-ACAT acquisitions and procurements to document IT and National Security Systems (NSS) needs, dependencies, interface requirements, and the net-ready key performance parameters (NR-KPP). The plan describes system dependencies and interface requirements in sufficient detail to enable testing and verification of IT and NSS interoperability and supportability requirements. The ISP also includes IT and NSS systems interface descriptions, infrastructure and support requirements, standards profiles, measures of performance, and interoperability shortfalls. The scope of the ISP is scaled to the relative size and funding profile for the program. The sponsoring or cognizant authority reviews, assesses, and approves the ISP for non-ACAT acquisitions and procurements, and forwards any critical interoperability or supportability issues

to the Assistant Secretary of Defense (Networks and Information Integration/DoD Chief Information Officer) and the applicable Functional Capabilities Board for review. The TD and AFOTEC/A-3 staff should pay particular attention to the ISP development because of the system-of-systems approach required to be described by the plan. Also of interest are the DOT&E special interest items of information assurance and interoperability. They should ensure the mission assurance category (MAC) code and confidentiality level are identified for unclassified and collateral secret systems (see DODD 8500.01E, *Information Assurance (IA)*). For Special Access Required, SAP, and SCI programs, they should ensure Protection Level, Level-of-Concern and Security Features and Assurances are identified based on Intelligence Community Directive 503, *Intelligence Community Information, Technology Systems Security Risk Management, Certification and Creditation*, Committee on National Security Systems Instruction (CNSSI) Number 1253, *Security Categorization and Control Selection for National Security Systems*, Director of Central Intelligence Directive (DCID) 6/3, *Protecting Sensitive Compartmented Information within Information Systems*, and/or Joint Air Force – Army – Navy (JAFAN) 6/3, *Special Access Program, Security Manual, Revision 1*.

2.11. Information Assurance Strategy. The IA Strategy provides documentation that "Ensure that the program has an information assurance strategy that is consistent with DoD policies, standards and architectures, to include relevant standards." Prior to MS A the IA Strategy should identify the Certification and Accreditation (C&A) process required by the system: DoD Information Assurance Certification and Accreditation Process (DIACAP), National Institute of Standards and Technology (NIST) 800-37, *Certification and Accreditation Process*, platform information technology determination process or Intelligence Community Directive 503 certification process for sensitive compartment programs. The IA Strategy also ensures compliance with the statutory requirements of USC, Title 40, *Public Buildings, Property, and Works,* and related legislation, as implemented by DODI 5000.02.

Section 2C—Processes, Procedures, and Products.

2.12. Program Identification. Program identification is the initial step in beginning an OT&E program within the early influence phase. In the program identification step, initial contact is established with program sponsors and developers (e.g. MAJCOMs, AFMC or AFSPC product centers, joint commands). Program information is gathered and AFOTEC/A-3 will track and provide regular updates to the AFOTEC/CC and Dets on programs in a pre-involvement status. The AFOTEC/CC approves all significant program related effort and travel prior to formal AFOTEC involvement.

2.13. Program Involvement. When early OT&E efforts are not yet defined and AFOTEC involvement is warranted, AFOTEC/A-3 recommends an executing Det and staffs an involvement package. The involvement recommendation is based on AFI 99-103 guidance, specifying which programs AFOTEC is responsible for. AFOTEC/A-3 prepares an involvement package when AFOTEC is the default operational test organization or when AFOTEC accepts a MAJCOM request to be the OT organization. AFOTEC/A-3 will develop, coordinate, and staff all involvement/non-involvement packages for AFOTEC/CC approval. The involvement package includes the IL, TO, bullet background paper (BBP) on the program, and any supporting program documents. The format for the BBP can be found in the AFOTEC Library on the AFOTEC Intranet.

2.14. Initial Test Resource Plan. The AFOTEC/A-3 test resource manager (TRM), in conjunction with the Det TRM and test team members as required, prepares an initial TRP no later than (NLT) 60 days after the TO is approved. The initial TRP is then updated during program updates. The TRP is accessed through the AFOTEC Intranet. TRPs are not initiated/required for: programs in pre-involvement; programs for which the Det (or AFOTEC/A-3) plans to recommend "non-involvement" to AFOTEC/CC; programs in which the first OT&E activity (EOA/OA, OUE, or OT&E) is scheduled outside of eight years from the requirements review board (RRB) (contact Programming Division for RRB information). **Note:** For SAP, the AFOTEC/A-3Z TRM, in conjunction with the Det TRM (as appropriate) and test team members as required, prepares an initial TRP NLT 60 days after the TO is approved. The SAP TRP will be handled via special procedures and not through the AFOTEC Intranet. All funding will be coordinated with AFOTEC/A-3Z TRM through proper communications channels. No RRB inputs should be made for SAP without AFOTEC/A-3Z prior approval.

2.14.1. External Funding for AFOTEC Programs. All new requests for external funding (including to SPOs and MAJCOMs) must go through AFOTEC/A-5/8 and Installations and Mission Support Directorate (AFOTEC/A-4/7). AFOTEC pays for all IOT&Es, FOT&Es, and QOT&Es out of our 3600 and 3400 program elements (PEs). In addition, our PEs are designed to accommodate start-up costs associated with new test programs, as well as most schedule slips. Exceptions arise when 1) awareness of a new program and an involvement determination occur within 18 months of planned test start (so-called "pop-up" programs), 2) test costs increase due to acquisition program slippage or deferments, or 3) the total cost of a test program exceeds $8 million. If you believe external funding is warranted on a program, do not directly request funds from an external organization. Submit your rationale to AFOTEC/A-4/7 for current year issues and AFOTEC/A-5/8 for future year issues. AFOTEC/A-4/7 and AFOTEC/A-5/8 will confer, make a determination, and then make the request (if needed) to the appropriate external funding source.

2.15. High Performance Teams. HPTs are convened to support AF Requirements Office (AF/A-5R) in the development of program requirements documents. The owning Det and AFOTEC/A-3 will send representatives to attend and support all HPTs. Primary considerations during the HPT are soundness of operational capability requirements, the testability of those requirements, and a listing of potential operational capabilities needed to fill the identified capability gap. AFOTEC/A-3 tracks HPT schedules and ensures Det awareness.

2.16. Integrated Test Team & Charter. The ITT, co-chaired by AFOTEC and the SPO, is established to involve all T&E stakeholders in a program as early as possible and to facilitate and coordinate IT&E planning. The ITT is the body that develops the required T&E documentation for the program and continues through IT&E execution and reporting. AFOTEC will request initiation of ITT charters within 60 days of the MDD, but not later than MS A or a TES development, whichever comes first. For MOT&Es where AFOTEC is not the lead OTA, the lead OTA's procedures for test planning and management is followed.

2.16.1. Charter. A formal, signed ITT charter is required for all ITTs and describes team membership, responsibilities, resources, and the products for which the ITT is responsible. While the ITT charter is owned by the SPO, the test team needs to ensure the SPO is aware of AFOTEC-unique requirements for an event-driven deliverable table and a conflict resolution chart in the charter. The charter is staffed by AFOTEC/A-3 for 2-Ltr coordination (AFOTEC/A-3 and AFOTEC/A-5/8 only) and AFOTEC/CS review for approval/signature

by the AFOTEC/CV. The owning Det is responsible for supporting adjudication of comments and interaction with the SPO.

2.17. Certification of Readiness for Operational Test & Evaluation. A structured mechanism or "process" to identify problems and risks associated with transitioning from DT&E to dedicated OT&E. It establishes a disciplined review and "certification process" beginning in the early stages of acquisition programs and culminating in certifications leading to more successful OT&E outcomes. The certification process is a tool to help acquisition managers at all levels identify risks, reach negotiated agreements on issues, and render more accurate assessments of a system's readiness to begin dedicated OT&E. The process includes a review of DT&E results; an assessment of the system's progress against critical technical parameters documented in the TEMP; an analysis of identified technical risks to verify that those risks have been retired during DT; and a review of the IOT&E entrance criteria specified in the TEMP. (Reference AFMAN 63-119, *Certification of System Readiness for Dedicated Operational Test and Evaluation,* for additional info.)

2.18. The Core Team. The core team is composed of AFOTEC Det and HQ personnel, user representatives, and SPO representatives. The Det TD is the program lead for the team. The headquarters staff is responsible for the coordination of a product within the HQ and external agencies, as applicable; adjudicating HQ and external comments to a product; and modifying the product for final signature and subsequent publishing. An AFOTEC HQ core team member's general responsibilities include ensuring the AFOTEC/CC's intent is incorporated into all products as early as possible to facilitate the staffing process.

2.19. Initial Test Design Process. The core team is responsible for executing the ITD process. During the ITD process the Det TD has operational control and AFOTEC/A-3, with AFOTEC/A-2/9 support, has process control to ensure overall technical and procedural integrity is maintained. The ITD provides the foundation for an operation's based test design and applies scientific principles, such as Design of Experiment (DOE), to ensure technical adequacy. DOE principles encompass a suite of techniques to design and analyze tests in an efficient, effective, and comprehensive manner. DOE supports the intent of test design by helping identify and manage factors in the operational test environment. The ITD fleshes out and documents the details that are known in order to build a solid basis for a test approach and to communicate that approach with others. The test approach is developed by identifying the operational conditions and testing constraints, thereby leading to a set of high-return test events. Further discussion leads to a basis of estimate and identification of resources (test articles, personnel, etc.), determination of execution methodologies (field test, distributed test, M&S, etc.), identifying test capability requirements and shortfalls, and refinement of the OT activities and schedule (IT&E, EOA/OA, OUE, OT&E, or combinations). ITD culminates in a viable test design. It ensures the level of involvement is appropriate, the cost is as accurate as possible, and that the core team has laid the foundation of an operationally and technically adequate, credible and sufficient OT where limitations and mitigation plans are clearly identified. The test design should be operationally representative and adequate, but still affordable.

2.19.1. Program Documentation. The ITD process relies heavily on the system employment and support concepts, capability requirements documents, and program acquisition strategy (additional documents may be used as required). AFOTEC/A-3 tracks the availability and completeness of program documentation and provides feedback to the community. In cases where program documentation is non-existent or only in draft form, the core team can expect

final documents to change portions of the ITD. The core team should plan for ITD updates and validation prior to subsequent milestones and detailed test planning (see paragraph 3.15). In instances where AFOTEC can positively impact the requirements process, feedback or issues should be elevated through the Det/CC and AFOTEC/A-3 to the AFOTEC/CC for action.

2.19.2. Initial Resource Estimates. The core team uses the ITD basis of estimate to further refine initial resource estimates documented in the initial TRP. The Det TRM updates the TRP to support the ITD. The TD and Det TRM review each resource category of the TRP to determine which line items need costing and what items AFOTEC typically pays for.

2.19.3. Initial Test Design Briefing. The TD develops the ITD briefing with core team support for presentation to AFOTEC/CC or AFOTEC/ED, depending on the program's ACAT level. The purpose of the ITD briefing is to convey to the AFOTEC/CC, with a high degree of confidence, the complete, beginning to end scope of OT activities, resources, and costs with rationale. The ITD briefing indicates the specific acquisition events that the planned OT activities support. The Det TD presents the acquisition information in a briefing to the AFOTEC/CC with the objective of receiving approval for an updated TO. The detailed briefing guide for the ITD is found on the AFOTEC Intranet.

2.19.4. Early Multiservice Operational Test & Evaluation Considerations. As the lead OTA for early MOT&E activities, AFOTEC will execute all of the ITD process requirements including a briefing to gain approval. As a supporting OTA, AFOTEC will follow the processes and requirements of the lead Service OTA.

2.20. Tasking Order Update. AFOTEC/A-3 will prepare the TO update and load the document into TMT for 2-Ltr and AFOTEC/CS coordination for approval/signature by the AFOTEC/CC. The updated TO provides the AFOTEC/CC broad direction on the scope of the evaluation and team responsibilities during planning, execution, and reporting including the required deliverables to be produced during the execution of the TO. The TO package includes an updated TRP as well as the program's RRB slides. If programmatics dictate AFOTEC non-involvement in a program after a TO has been issued (e.g., a program is cancelled), the responsible Det will initiate the closeout process. (See paragraph **6.3** for additional info.)

2.21. Test Resource Plan Update. As explained in the earlier paragraphs regarding developing the initial TRP, the resource requirements are identified in sufficient detail to support preparation of a TRP (AFOTEC/A-3Z leads TRP activities for SAPs). An update of the resource information should be accomplished after the basis of estimate is completed. The TRP is the planning and management document that provides the means for programming all resources to support OT&E, and is the source for OT&E inputs to the Air Force planning, programming, budgeting, and execution system throughout the test. If a resource is not specified in the TRP, it will not be planned or programmed for the upcoming test. (See paragraph **2.14** for additional info.)

2.21.1. Test Capability Overview. Test capabilities are assets that are used in conjunction with the system under test or a representation of the system under test to generate data for test measures. AFOTEC does not own or operate any test range, facility, or asset. AFOTEC leverages external funding to develop the required test capabilities. Test capabilities include test ranges, instrumentation and data collection systems, ground test facilities, distributed test capabilities, test drivers and digital modeling capabilities. Establishing and maintaining

adequate test capability is essential to the AFOTEC core mission of determining operational capabilities and limitations of AF and joint systems. Test capabilities enable test teams to expose systems under test to operationally realistic environments.

2.21.2. Test Capability Shortfalls. Test capabilities are developed and maintained to support testing of advanced weapons systems that exploit the latest technologies. These important test resources could take 5 to 10 years to design and build, so the TD should analyze the shortfalls and include the shortfalls in an updated TRP as appropriate. The TRP needs to be in sufficient detail to ensure it provides test resources in a timely manner. (The Det, AFOTEC/A-2/9, and AFOTEC/A-5/8 work collaboratively to ensure test capabilities are properly accredited for use in OT&E. AFOTEC/A-2/9 is the AFOTEC POC for M&S test capabilities and test capability accreditation.)

2.22. Test and Evaluation Strategy. Programs that undergo a MS A decision have a TES. The ITD process defines the OT requirements for the TES. The TES describes how T&E and M&S are applied to confirm that each increment provides its required operational effectiveness, suitability and mission capability. The *Defense Acquisition Guidebook* (DAG) outlines content expectations for the TES including items such as critical operational issues, scope and structure of the operational evaluations, T&E schedule, etc. Additionally, it is desired that the TES describe, in as much detail as possible, the risk reduction efforts across the range of activities (M&S, DT&E, OT&E, etc). The AFOTEC/CC coordinates on the TES; Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) and DOT&E approve the TES.

Chapter 3

AFOTEC ACTIVITIES SUPPORTING MILESTONE B

Section 3A—Overview

3.1. Introduction. The Det/CC, assisted by the Det technical advisor, is responsible for test team activities and products between MS A and MS B. The activities include reviewing any updates to existing or new external documentation, reviewing and updating the test design and TO, participating in the HPT for production of the capability development document (CDD), developing inputs to the MS B TEMP, and conducting a MS B EOA.

Section 3B—External Support Documents

3.2. Acquisition Decision Memorandum Update. The ADM documents the decisions made and exit criteria established at the MS A decision review. The ADM specifies the pre-requisites to the MS B decision. Operational testers need to be cognizant of and implement the decisions documented in the ADM. Det/CCs ensure ADMs are sent to AFOTEC/A-3 for 2-Ltr coordination and AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve the ADMs based on the program's ACAT level. (See paragraph **2.4** for additional info.)

3.3. Capability Development Document. For programs where AFOTEC is the lead OTA, AFOTEC/CC certifies requirements in the CDD are testable and measurable in conjunction with the AFROC. The CDD captures the information necessary to develop a proposed program, normally using an evolutionary acquisition strategy. The CDD outlines an affordable increment of a technically mature capability with military utility. The CDD supports the MS B acquisition decision. The CDD provides the operational performance attributes necessary for the acquisition community to design the proposed system, including key performance parameters (KPPs) that guide the development and demonstration of the current increment. The performance attributes, including the KPPs, are expressed as thresholds and objectives. Performance attributes have previously been referred to as performance parameters or performance requirements.

3.4. Analysis of Alternatives Update. The AoA is updated following a MS A decision and validation of the ICD. The focus of the AoA is to refine the selected concept documented in the validated ICD. AFOTEC/A-3 has developed a checklist to assist in reviewing AoA documents. (See paragraph **2.6** for additional info.)

3.5. Modeling & Simulation Support Plan Update. The MSSP, updated by the SPO, captures all updated M&S requirements over the life cycle of an acquisition program including those for IT&E. TDs need to be aware of the MSSP and ensure OT M&S requirements identified are included as early as possible in order to be a part of the SPO's M&S funding strategy (the SPO/PM is responsible for funding required M&S resources). Reference DODI 5000.02 and AFI 16-1002. TDs need to work with the SPO early in the program to develop models that will satisfy both DT and OT requirements. Contact AFOTEC/A-2/9 if any questions arise concerning M&S. (See paragraph **2.8** for additional info.)

3.6. Life Cycle Management Plan Update. The LCMP is updated for MS B and integrates the acquisition and sustainment strategy(ies) and provides all support requirements of a system, subsystem, or major end item. If there is both an LCMP and a TEMP for the program, then the

LCMP can contain a summary of the test program as documented in the TEMP. If there is not a TEMP for the program, then the LCMP contains all of the information that would have been contained in the TEMP to provide an integrated test plan and minimize test event duplication and streamline the process. If there is only an LCMP required for the program, the TD should ensure the required KPP/key system attributes are addressed in the LCMP (e.g., sustainment KPP and materiel availability KPP). (See paragraph **2.9** for additional info.)

3.7. Information Support Plans Update. The ISP is updated by the SPO for all ACAT and non-ACAT acquisitions and procurements to document IT and NSS needs, dependencies, interface requirements, and the NR-KPP. (See paragraph **2.10** for additional info.)

3.8. Information Assurance Strategy. The IA Strategy is reviewed at all Acquisition MS Decisions, including early MSs when C&A documentation may not yet be available. It is written at a higher level than the DIACAP or other C&A process documentation, and it provides necessary details such as MAC, confidentiality level, applicable baseline IA controls, and identifies the appropriate C&A process. (See paragraph **2.11** for additional info.)

3.9. Authority to Operate or Interim Authorization to Operate. The ATO/Interim Authorization to Operate (IATO) and the request package (including the Information Technology Security Plan of Action and MS, or plan of action and MSs (POA&M)) will provide insight into the system's IA readiness for operational test. It will also provide background for developing test scenarios that consider realistic threats in the operational environment.

3.10. Security Classification Guide. The SCG provides security instructions for all military and civilian personnel working on a system. It is available from the SPO and should be read and understood by all core/test team members to avoid security violations. Working papers, test reports and briefings, computer operations, telephone conversations, mailing, courier deliveries, and meetings are governed by the SCG. Core/test team members should also be aware that AFOTEC/CC does not have OCA. In the absence of a SCG, or if the SCG does not adequately cover capabilities, vulnerabilities, weaknesses and limitations, core/test team members should contact AFOTEC/CVI regarding the OCA process. (See paragraph **1.9** for additional info.)

3.11. Threat Assessment Documents. Validated intelligence products should be used to establish operational realism for man-made threats during OT&E. The most authoritative threat data reference for an acquisition program is the system threat assessment report (STAR), generated by a designated intelligence production agency such as the National Air and Space Intelligence Center (NASIC). The STAR describes the lethal and non-lethal threats against the proposed system and the future threat environment in which the system operates. However, STARs are usually only produced for ACAT I programs; ACAT II and III programs use either a system threat assessment (STA), or one or more capstone threat assessment documents as a primary threat reference. Capstone threat assessments describe threats to broad classes of systems; published capstone threat assessments include those for air, missile defense, information operations, chem/bio, and the interim space capstone threat assessment. Additionally, OSD-validated defense planning scenarios should be used when building the test threat list and the battlespace environment for the system under test. The OT planners should use only the most current versions of these documents to develop the TEMP and to determine if a new program meets user requirements. Det intelligence analysts are the point of contact for obtaining any of these documents (most are available online on SIPRNet), and for providing intelligence updates that may impact ongoing test planning. Det intelligence analysts and

AFOTEC/A-2/9 work closely with the TD to ensure that operationally realistic threats (including natural environment threats) are used as a basis for test.

3.12. Request for Proposal. Request for Proposals (RFPs) are used in negotiated acquisitions to communicate Government requirements to prospective contractors and to solicit proposals. The RFPs for competitive acquisitions, at a minimum, describe the Government's requirement; anticipated terms and conditions that apply to the contract; information required to be in the offeror's proposal; and factors and significant subfactors that are used to evaluate the proposal and their relative importance. To support IT objectives it is imperative that the RFP address AFOTEC's requirement to have the same data and data access required by the SPO or the RTO conducting DT&E. Successful IT requires meaningful access to review contractor and developmental test plans and procedures, test events, and DT data.

Section 3C—Processes, Procedures and Products.

3.13. High Performance Team. HPTs are convened to support AF/A-5R and the Joint Capabilities Integration and Development System (JCIDS) process to produce the CDD. The owning Det and AFOTEC/A-3 will send representatives to attend and support all HPTs. (See paragraph **2.15** for additional info.)

3.14. Integrated Test Team Charter Review, Update and Coordination. The core/test team reviews and provides inputs/updates to the program ITT charter. The charter is then staffed by AFOTEC/A-3 for 2-Ltr coordination (AFOTEC/A-3 and AFOTEC/A-5/8 only) and AFOTEC/CS review for approval/signature by the AFOTEC/CV. The Det is responsible for supporting adjudication of comments and interaction with the SPO. (See paragraph **2.16** for additional info.)

3.15. Test Design Validation. After the ITD has been accomplished, any changes/additions to the program's system design or performance capabilities/requirements may require a test design validation. This process is initiated either by a request from the Det TD or a recommendation from AFOTEC/A-3. The core team reviews those changes/additions to understand their impact to the ITD and, if necessary, updates the test design using the ITD methodology. (See paragraph **2.19** for additional info.)

3.16. Test & Evaluation Master Plan for Milestone B. Major Defense Acquisition Programs (MDAP), Major Automated Information Systems (MAIS), and oversight programs require a TEMP to support MS B. The TEMP documents the overall structure and objectives of the T&E program. It provides the framework within which to generate detailed T&E plans. It documents schedule and resource implications associated with the T&E program, including comparison testing or a suitable alternative. It contains many of the agreements among participants and specifies the levels of funding for the test. The "contract" between DT and OT for what test activities are done in DT, and thereby reduce OT should be documented in the TEMP. As well as, the ITT schedule and criteria for pre-certification reviews that will help to identify and reduce program risks. The TEMP is widely viewed by members of the T&E community as a "contract" among the various parties.

   3.16.1. The DAG outlines content expectations for the TES/TEMP including items such as critical operational issues, scope and structure of the operational evaluations, T&E schedule, etc. While DOT&E expects certain content included in the TEMP, the format is flexible.

During the initial development of the TEMP all inputs will be staffed by the Det via 2-Ltr TMT coordination for AFOTEC/A-3 approval prior to initial release to the SPO. When changes occur, it is critical to update the TEMP to reflect the requirements of the newly designed OT. The TEMP is staffed by AFOTEC/A-3 for 2-Ltr coordination and AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the TEMP based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3.

3.17. Test Concept Process. The Test Concept Process involves a technical review (TR) and the test concept development which are accomplished for every OT activity (EOA/OA, OUE, or OT&E). The TR is a quality check to verify the technical adequacy, credibility, and methodology of the scheduled test, analysis and reporting. AFOTEC/A-2/9 is responsible for conducting the TR to certify that the test team is collecting the appropriate level of data to answer important OT questions. The test concept continues the development of the OT approach created during the ITD, allowing the test team to leverage any increase in program maturity. The test team can further develop the OT&E construct, test scenarios, M&S, and verification, validation, and accreditation plans. The efforts spent developing the test concept also gives the test team the information needed to integrate activities with the DT community. The TR should be completed 270 days before the OT activity starts and the test concept should be completed 180 days before the OT activity starts. Once completed, the test concept goes through a 2-Ltr review for operational and technical adequacy, credibility, and sufficiency. After adjudication, the test concept is briefed to the AFOTEC/CC or AFOTEC/ED (dependent on ACAT level) for approval regardless of the program's oversight status. Approval is based on the value of the OT information, operational and technical relevance, and resource requirements/availability. Following approval, the test concept is briefed to the SPO, AF/TE, and DOT&E, as required.

3.17.1. Updated Tasking Order. If necessary following test concept development, AFOTEC/A-3, with Det support, prepares the updated TO using the TO template on the AFOTEC Intranet (an updated TO must include an updated TRP.) The updated TO updates the AFOTEC/CC's broad guidance on the scope of the evaluation (including critical operational issue (COIs)), the resource allocation bounds, and team responsibilities during the planning, execution, and reporting phases, including the required deliverables to be produced during the execution of the TO. AFOTEC/A-3 is the headquarters' staff POC for coordinating the TO. AFOTEC/CC approves changes to the TO. Future updates to an existing TO should be handled by AFOTEC/A-3 with Det support, although scope or cost changes may require test team collaboration and participation. (See paragraph **2.13** for additional info.).

3.17.2. Updated Test Resource Plan. An update of the resource information should be accomplished after the test concept is completed. The TRP must be updated in sufficient detail to ensure it provides test resources in a timely manner. The TRP will document the resources needed for dedicated OT. In addition, the TRP will assume IT&E will be successful in producing OT usable data. AFOTEC/A-3Z leads the TRP update activities for SAPs.

3.18. Test Capability Roadmap. AFOTEC/A-5R combines information from the test concept along with AFOTEC long-range goals documented in the Strategic Plan and future weapons system characteristics from a variety of sources to develop and publish the AFOTEC test capability roadmap. The roadmap serves as the cornerstone of AFOTEC's test capability investment strategy and includes a detailed description of each test capability requirement,

information on the baseline test capability, existing shortfalls, potential solutions, impact if not funded, and the preferred solution/investment strategy. The roadmap looks at 3-10 years in the future and is updated every two years. (See paragraphs 2.21.1. and 2.21.2. for additional info.)

3.19. Operational Test Planning Considerations. The test concept is used as a basis for detailed test planning. To support AFOTEC's integrated test culture, the test plan should include integrated test events and activities. Integrated test planning promotes the combined execution, where appropriate, of developmental and operational test events to satisfy both DT and OT data requirements. This provides an opportunity to establish a "contract" with the DT community to leverage testing, share data and reduce the number of test events. Instead of looking back at DT and determining if an event was operationally relevant enough to apply to OT&E, AFOTEC can influence OT relevance while DT is planned. Prior to using data collected during IT&E, the TD should ensure the data is operationally relevant. Additional requirements for test planning include: Environment, Safety, and Occupational Health (ESOH); Deficiency Reporting, Investigation, and Resolution (DRI&R) Process; Joint Reliability and Maintainability Evaluation Team (JRMET); and the Test Data Scoring Board (TDSB).

3.19.1. Environmental, Safety, and Occupational Health. The three basic principles of ESOH are to sustain readiness, leverage resources, and be a good neighbor. The Det/CC is responsible for providing a safe and healthy workplace, enhancing mission accomplishment, preserving resources, protecting the environment and minimizing risks—on and off the installation or public lands. Every test activity (EOA/OA, OUE, or OT&E) requires an ESOH Certification Board (ESOHCB) with AFOTEC/SE. The ESOHCB will be scheduled with enough time (prior to the test readiness review for OT&E) to implement risk mitigation measures and publish a Health and Safety Plan. AFOTEC/SE supports these responsibilities with subject matter experts assigned to the core/test teams. (The ESOH documents supporting operationally relevant questions that need to be worked for the test activity are embedded support documents for the Test Concept.)

3.19.2. Deficiency Reporting, Investigation, and Resolution.   The DRI&R processes promote the ability to identify and correct deficiencies in Air Force and Joint systems or equipment for which AFOTEC is the OTA or supporting the OTA before they impact mission capability (Ref. Technical Order (T.O.) 00-35D-54, *USAF Deficiency Reporting and Investigating System*). Successful implementation drives resolution decisions, tempered by total ownership cost, to correct, mitigate, and/or accept risk of conditions impacting operational safety, suitability and effectiveness. Success is based upon two premises: the user, operator or maintainer will report deficiencies on their assigned systems; and the PM will establish a proactive process to analyze data and act accordingly to implement solutions after coordination with the user/sponsor.

3.19.3. Joint Reliability and Maintainability Evaluation Team. Establishment of a JRMET is a key activity for T&E. The JRMET assists in analyzing and categorizing reliability, availability, and maintainability data during IT&E. The SPO establishes and chairs the JRMET during IT&E. If for any reason the SPO chooses not to chair or participate, AFOTEC may chair the JRMET. During dedicated OT&E, the AFOTEC TD (or designated representative) chairs the JRMET.

3.19.4. Test Data Scoring Board.   The TDSB is a government-only forum held in conjunction with those tests having a JRMET that compiles, reviews, and scores all available

data that may be used in OT&E computations. The purpose of the TDSB is to remove perception of contractor bias in the data scoring process. The SPO establishes and chairs the TDSB during IT&E. If for any reason the SPO chooses not to chair or participate, AFOTEC may chair the TDSB. During dedicated OT&E, the AFOTEC TD (or designated representative) chairs the TDSB.

3.20. Operational Assessment Planning. EOA/OAs are not conducted in lieu of OT&E. However, they are planned, executed, and reported from an operational perspective. EOA/OAs are conducted by AFOTEC on acquisition programs when required to inform a MS/acquisition decision. EOA/OAs are required for all OSD T&E oversight programs or as directed, and are approved by DOT&E. EOA/OAs promote interaction with the operating command and developer and (from an operational perspective) ensure the establishment of clearly defined operational requirements and meaningful OT&E criteria. EOA/OAs outline the rationale (decision point being informed), the overall program decision points (program, production, and assessment/test events known or projected), and the general activities that are to be performed. An EOA/OA may consist of a specially requested assessment, performed to address specific operational questions. EOA/OAs are documented in the TEMP and the TRP. Multiservice ACAT I and II programs with the Air Force designated as the lead service normally require an EOA/OA. For non-Air Force led multiservice programs, the AFOTEC PM/TD coordinate with the lead service to determine if an EOA/OA is required. (See paragraph **3.19** for additional info.)

Section 3D—Activities and Events.

3.21. Early Operational Assessment. Note: *The Test Concept Process is accomplished for every OT activity* (see paragraph **3.17** for additional info). An EOA is conducted to provide insight into progress being made toward operational effectiveness, suitability, mission capability, and readiness for dedicated OT&E. The OT&E construct is built during the ITD development process and will form the basis for the EOA. The OT&E construct used for the EOA will give insight into the elements that make up effectiveness and suitability for the system under test. The objective of the EOA is to assess the most promising design approach sufficiently early in the acquisition process to ensure it has the potential to fulfill user requirements. It focuses on significant trends noted in development efforts, programmatic voids, areas of risk, and adequacy of requirements. The content of EOAs may vary depending on the program's ACAT and acquisition strategy. Det/CCs are required to develop an EOA plan prior to conducting the EOA. For all OT plans/reports the owning Det will staff the products for 2-Ltr coordination and AFOTEC/A-3 will coordinate the AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the plan/report based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3. An EOA report will be produced and signed within 42 days after the last test event or 45 days prior to the MS decision. (See paragraph **3.20** for additional info.)

Chapter 4

AFOTEC ACTIVITIES SUPPORTING MILESTONE C

Section 4A—Overview

4.1. Introduction. The Det/CC, assisted by the Det technical advisor, is responsible for the activities and products between MS B and MS C. The activities include reviewing any document updates or new external documentation, developing a test concept, participating in the high performance team for development of the capability production document (CPD), developing inputs to the MS C TEMP, and conducting a MS C OA. The Det/CC and TD need to review the activities discussed in Chapter 2 and 3 if assigned to an acquisition program following MS B.

Section 4B—External Support Documents

4.2. Acquisition Decision Memorandum Update. The ADM documents the decisions made and exit criteria established at the MS B decision review. It specifies what is to be done prior to the MS C decision. The ADM update may also include development and processing of the Acquisition Program Baseline. Operational testers need to be cognizant of and implement the decisions documented in the ADM. Det/CCs ensure ADMs are sent to AFOTEC/A-3 for 2-Ltr coordination and AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve the ADM based on the program's ACAT level. (See paragraph **2.4** for additional info.)

4.3. Program Management Directive. The Program Management Directive (PMD) provides HQ USAF program direction and guidance to the appropriate commands following formal establishment of the program at MS B. It also designates the implementing, participating, supporting commands, and OTAs and their program responsibilities/relationships.   It is important to know what the mandatory support obligations are for all listed agencies. AFOTEC/A-3 has developed a checklist to assist in reviewing PMDs. When reviewing the PMD, the AFOTEC reviewer should: understand the AFOTEC/CC position on the program; involvement in the OT&E related activities; understand AFOTEC support requirements from/to the SPO and other commands or agencies; and understand if the direction it proposes for AFOTEC (and/or the MAJCOM) is correct and reflects AFOTEC's intentions (if not, then submit proposed changes to correct these deficiencies.) AFOTEC/A-3 will staff all PMDs for 2-Ltr coordination and AFOTEC/CS review for signature by the AFOTEC/ED. **Note:** See AF HQ Operating Instruction (HOI) 63-1, *Headquarters Air Force Guidance for Preparing Program management Directives,* for information on PMDs.

4.4. Capability Production Document. For programs where AFOTEC is the lead OTA, AFOTEC/CC validates requirements in the CPD are testable and measurable in conjunction with the AFROC. The CPD addresses the production elements specific to a single increment of an acquisition program. A CPD is developed after the critical design review and is required prior to the MS C decision review. The CPD is approved prior to Low Rate Initial Production (LRIP) and IOT&E. The threshold attribute is defined as the minimum acceptable operational value below which the utility of the system becomes questionable.

4.5. Enabling Concept. The user develops an enabling concept which details their perceptions for system operations, maintenance and associated training. It describes how a particular task or

procedure is performed, within the context of a broader functional area, using a particular capability, such as a specific technology, training or education program, organization, facility, etc. AFOTEC ensures the enabling concept is reflected in the OT&E and integrated test strategies and planning, to include OT&E documents, so that the OT&E of the system is executed as the user/operator plans to employ it.

4.6. Analysis of Alternatives Update. Although rare, the AoA may be updated following a MS B decision and validation of the CDD. The focus of the AoA update will be to refine the selected concept documented in the validated CDD. AFOTEC/A-3 has developed a checklist to assist in reviewing AoA documents. (See paragraph **2.6** for additional info.)

4.7. Modeling & Simulation Support Plan Update. The MSSP, updated by the SPO, captures all the M&S requirements over the life cycle of an acquisition program including those for DT and OT. TDs need to be aware of the MSSP and ensure OT M&S requirements identified are included as early as possible in order to be a part of the SPO's M&S funding strategy (the PM is responsible for funding required M&S resources). Reference DODI 5000.02 and AFI 16-1002. Contact AFOTEC/A-2/9 if any questions arise concerning M&S.   (See paragraph **2.8** for additional info.)

4.8. Life Cycle Management Plan Update. The LCMP is updated for MS C and integrates the acquisition and sustainment strategy(ies) and provides all support requirements of a system, subsystem, or major end item. If there is not a TEMP for the program, then the LCMP contains all of the information that would have been contained in the TEMP to provide an integrated test plan and minimize test event duplication and streamline the process. If there is both a LCMP and a TEMP for the program, then the LCMP can contain a summary of the test program as documented in the TEMP. (See paragraph **2.9** for additional info.)

4.9. Information Support Plans Update. The ISP is updated by the SPO for all ACAT and non-ACAT acquisitions and procurements to document IT and NSS needs, dependencies, interface requirements, and the NR-KPP. (See paragraph **2.10** for additional info.)

4.10. Information Assurance Strategy Update. The IA Strategy is updated by the SPO to ensure it captures all the IA requirements over the life cycle of the program.   The TD will call upon the test team IA subject matter expert should any questions arise concerning the planned IA activities and the executed IA activities. (See paragraph **2.11** for additional info.)

4.11. Authority to Operate or Interim Authorization to Operate. The ATO/IATO or status of the ATO/IATO request package (including the Information Technology Security Plan of Action and Milestones, or POA&M) will provide insight into the system's IA readiness for operational test. (See paragraph **3.9** for additional info.)

4.12. Threat Assessment Documents. Validated intelligence products should be used to develop the AFOTEC test concept and test plan. The most authoritative reference for man-made threat data for an acquisition program is the STAR, STA or capstone threat assessment generated by a designated intelligence production agency such as the NASIC. OT planners should use only the most current versions of these documents to develop the test concept, test plan and TEMP. A virtual STAR (VSTAR) may precede or supplement a Defense Intelligence Agency-validated STAR. The TD should call upon the Det intelligence analyst or the Intelligence Division should any questions arise. (See paragraph **3.11** for additional info.)

Section 4C—Processes, Procedures and Products.

4.13. High Performance Team. HPTs are convened to support AF/A-5R and the JCIDS process to produce the CPD. The owning Det and AFOTEC/A-3 will send representatives to attend and support all HPTs. (See paragraph **2.15** for additional info.)

4.14. Integrated Test Team Charter Review, Update and Coordination. The core/test team reviews and provides inputs/updates to the program ITT charter. The charter is then staffed by AFOTEC/A-3 for 2-Ltr coordination (AFOTEC/A-3 and AFOTEC/A-5/8 only) and AFOTEC/CS review for the AFOTEC/CV's approval/signature. The Det is responsible for supporting adjudication of comments and interaction with the SPO. (See paragraph **2.16** for additional info.)

4.15. Forming the Test Team. Test team composition depends on the scope of the test. The OT&E plan shows the formal organization of the test team. Test teams may consist entirely of AFOTEC personnel or may be augmented by MAJCOM personnel. The Det/CC selects a TD from his available personnel – the TD is generally not assigned analyst or other support duties. Once assigned and oriented, the TD may make adjustments in needed personnel and where they are assigned. Consider obtaining expertise from the local area where the test is conducted to support the team and expedite acclimation to the area. **Note:** Assignment to a test team does not mean you are a dedicated resource to that team exclusively. Team members are agile and flow between teams for specific tasks.

4.15.1. Activating an Operating Location. The request to activate an OL can come from an AFOTEC Director/Det/CC or it can be directed through an AFOTEC/CC approved TO. The Director/Det/CC will contact AFOTEC/A-3 and the AFOTEC/CV when considering activating an OL. One of the factors to consider when determining the need for an OL is whether it is more cost-effective to the government to have an OL versus test team members performing temporary duty (TDY) to plan, execute, and report the test. AFOTEC/CC approves all unit activation/inactivation requests. OLs are "owned" by supporting AFOTEC Det or Directorate. The activation/inactivation process is managed by Strategic Plans and Policy Division (AFOTEC/A-8X).

4.15.2. Test Team Members and the Test Resource Plan. The TD identifies which specialties and skill levels are needed for the test team. The results are included in the TRP and are updated biannually or on an as-needed basis. The TD and Det leadership decide which test team positions are permanently assigned and which positions are better filled using individuals in a TDY status. AFOTEC permanent party positions should be coordinated with Manpower and Personnel (Operations) Division (AFOTEC/A-1W) through the TRP process, and are normally taken from current directorate/Det resources. In determining how early to position the test team, consideration should be given to ensuring adequate time for training and familiarization of the test environment. The scope of the test, the location (for example, not with a Det), or special activities associated with an OA may warrant earlier assignment and placement of key test team members. The timing of test team stand-up needs to be carefully considered as part of OT Planning. Any late changes to test team personnel are coordinated with AFOTEC/A-1W and approved by AFOTEC/CV.

4.16. Support Agreements. Whenever a support agreement is required, the initial step should be to contact the support agreements manager (SAM) in AFOTEC/A-8X. The SAM can provide

examples, establish reasonable timelines, and determine the appropriate coordination process within the headquarters when it is time to staff the agreement. There are two major support agreement directives: DODI 4000.19, *Interservice and Intragovernmental Support,* and AFI 25-201, *Support Agreement Procedures*.

   4.16.1. Types of Support Agreements. There are several types of support agreements: host base support agreement (documented on a DD Form 1144, *Support Agreement*); MOA; MOU; and service level agreements. The support agreement identifies items such as test responsibilities, financial responsibility for various test activities, general guidelines for test support, guidelines for allowing non-AFOTEC assigned personnel permanent access to an AFOTEC facility, and host-base provisions.

4.17. Test Capabilities. Test teams define test capability shortfalls and AFOTEC/A-5/8 seeks funding to develop solutions. AFOTEC/A-5R and AFOTEC/A-8R are the AFOTEC POCs for test capabilities, including test investment planning. As such, AFOTEC/A-5R and AFOTEC/A-8R support core teams, Det, and headquarters staff in the identification of test range/facility capabilities, determining test capability shortfalls, submitting requirements; and advocating for OT&E needs within the AF and DoD test investment process. AFOTEC/A-5R and AFOTEC/A-8R work closely with the Dets and AFOTEC/A-3 to refine test infrastructure requirements. Once the shortfalls are approved by AFOTEC/A-3, AFOTEC/A-5R and AFOTEC/A-8R seek funds to develop solutions to shortfalls. AFOTEC/A-5R publishes the AFOTEC test capability roadmap. AFOTEC/A-8R has the charter to develop and maintain OT capability at the NTTR. (See paragraphs 2.21.1. and 2.21.2. for additional info.)

4.18. Data Management and Analysis Plan. The purpose of the Data Management and Analysis Plan (DMAP) is to provide detailed procedures for the collection, reduction, quality assurance, collation, analysis, storage, and disposition of data gathered to support determination of a system's operational effectiveness, suitability and mission capability. The Det/CC is the approval authority for all DMAPs. The DMAP aligns with the test plan and detailed test procedures (DTP) in terms of contribution to a successful test. The DMAP is both a planning tool to ensure procedures are in place for data collection and a data management tool for tracking and assessing data collection during test execution. A DMAP is published as a separate document for all ACAT I and OSD T&E oversight programs. For all other programs, the essential elements of the DMAP should be included in the OT&E plan or published as a separate document. The test team should develop the DMAP in parallel with the OT&E plan. Any external requests for a copy of the DMAP will be coordinated through AFOTEC/A-3.

4.19. Detailed Test Procedures. DTPs are written and maintained by the test team. DTPs are living documents. The DTPs describe how the test team executes the test. DTPs are working-level reference documents that provide an audit trail of planning decisions, rationale, and records. The DTPs are intended for test team use only and are not required to be coordinated externally. However, there may be situations when the test site/range requires the DTPs to be reviewed for safety, security, and operational integrity issues. The Det/CC is the approval authority for all DTPs.

4.20. Determine Last Test Event. In order to properly plan for the development and coordination of the final report, the TD defines the activity that constitutes the last test event (LTE) while producing the report at the earliest possible date. The LTE is either the last specific event of a test (e.g., the last sortie) or the conclusion of the JRMET (see paragraph 3.19.3. for

additional info) or data analysis, whichever will meet the decision maker's report suspense of a decision date minus 45 days. The LTE is documented in the tasking order, test plan, added to the program's ATPA page and briefed at the test readiness review (TRR). If the LTE needs to be changed, the Det/CC requests approval from the AFOTEC/A-3 for the new LTE. Upon completion of the last test event, the TD submits a daily report to highlight coordination timelines for the final report.

4.21. Visual Information Documentation. Once the test plan has been approved, the TD and test team should determine where to incorporate visual information documentation (VIDOC) (photos, video, etc.) during test execution. Advance coordination with AFOTEC's Public Affairs and Multimedia is required. When VIDOC is deemed appropriate, test teams will consider VIDOC resources using the following priority: VIDOC of the system performing in the real world employed environment will be used first; VIDOC obtained from dedicated OT events will be used second; and third choice will be to use VIDOC obtained from IT&E and dedicated DT events.

4.22. Test & Evaluation Master Plan Update. MDAP, MAIS, and oversight programs require a TEMP or TEMP update to support MS C. The TEMP documents the overall structure and objectives of the T&E program. It provides the framework within which to generate detailed T&E plans. The TEMP is staffed by AFOTEC/A-3 for 2-Ltr coordination and AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the TEMP based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3. (See paragraph **3.16** for additional info.)

4.23. Operational Assessment Planning. OAs are not conducted in lieu of OT&E. However, they are planned, executed, and reported from an operational perspective. OAs are conducted by AFOTEC on acquisition programs when required to inform a MS/acquisition decision. (See paragraphs **3.19** and **3.20** for additional info.)

4.24. Operational Utility Evaluation Planning. The OUE plan should define the purpose, scope, resources, timing of events, and allocation of test responsibilities as required for the OUE. OUEs can be used to identify capabilities and limitations of fielded systems; determine the effectiveness/suitability or operational military utility of non-fielded systems; validate a system's concept; evaluate the expanded role of fielded systems; assess competing concepts, alternatives, or systems; evaluate a new application of an existing technology; determine utility of a system to perform operational mission requirements; support AoA development, source selection, fielding of interim or partial capability ACAT I or II programs, or full rate production and fielding for ACAT III, non-oversight programs. Examples of such programs are one-of-a-kind or an expanded or modified role of an existing system (e.g., putting a fighter electronic countermeasures pod on a transport aircraft). When OUEs are used, they should be conducted without excessive expenditures of time, money, and resources, streamlined tests that are specific in nature, flexible in planning and reporting formats, and adjustable to customer expectations. The organization requesting the OUE and AFOTEC jointly develop a test-readiness certification process that may be tailored as appropriate. If not directed by a PMD and supported with a verified capability requirements document, the OUE can be negotiated through an MOA which specifies the OUE requirements in a manner that clearly defines the questions to be answered by the OUE. (See paragraphs **3.19** and **3.20** for additional info.)

Section 4D—Activities and Events.

4.25. Operational Assessment. Note: *The Test Concept Process is accomplished for every OT activity* (see paragraph **3.17** for additional info). An OA is conducted to provide insight into progress being made toward operational effectiveness, suitability, mission capability, and readiness for dedicated OT&E. The OT&E construct will form the basis for the OA and will give insight into the elements that make up effectiveness and suitability for the system under test. An OA can be conducted at any time using technology demonstrators, prototypes, mockups, engineering development models, or simulations. The focus of an OA is on significant trends noted in development efforts, programmatic voids, areas of risk, adequacy of requirements, and the ability of the program to support adequate operational testing. The content of OAs may vary depending on the program's ACAT and acquisition strategy. Det/CCs are required to develop an OA plan prior to conducting the OA. For all OT plans/reports the owning Det will staff the products for 2-Ltr coordination and AFOTEC/A-3 will coordinate the AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the plan/report based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3. An OA report will be produced and signed within 42 days after the last test event or 45 days prior to the MS decision. (See paragraph **3.20** for additional info.)

4.26. Operational Utility Evaluation. Note: *The Test Concept Process is accomplished for every OT activity* (see paragraph **3.17** for additional info). The OUE was designed to allow AFOTEC a convenient and proper tool to assist both users and decision makers in determining the utility and value of a system or partial capability. OUEs can be tailored to the needs of the specific decision being supported. Det/CCs are required to develop an OUE Plan prior to conducting the OUE. For all OT plans/reports the owning Det will staff the products for 2-Ltr coordination and AFOTEC/A-3 will coordinate the AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the plan/report based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3. An OUE report will be produced and signed within 42 days after last test event or 45 days prior to the MS decision. (See paragraph **4.24** for additional info.)

Chapter 5

AFOTEC ACTIVITIES SUPPORTING FULL-RATE PRODUCTION (FRP)/INITIAL OPERATIONAL CAPABILITY (IOC)/FIELDING DECISION

Section 5A— – Overview

5.1. Introduction. The Det/CC, assisted by the Det technical advisor, is responsible for the activities and products from MS C through the FRP, IOC, or fielding decision. The activities include reviewing any updates to or new external documentation, finalizing the OT&E test plan, conducting the test readiness review, and executing and reporting the OT&E. The TD needs to review the activities discussed in Chapters 2, 3, and 4 if assigned to an acquisition program following MS C.

Section 5B—-External Support Documents

5.2. Acquisition Decision Memorandum Update. The ADM documents the decisions made and exit criteria established at the MS C decision review. It specifies what is to be done prior to the FRP/IOC/Fielding decision. Operational testers need to be cognizant of and implement the decisions documented in the ADM. Det/CCs ensure ADMs are coordinated with the AFOTEC/CC. (See paragraph **2.4** for additional info.)

Section 5C—- Processes, Procedures and Products.

5.3. Test & Evaluation Master Plan Update. The TEMP update documents the overall structure and objectives of the T&E program. It provides the framework within which to generate detailed T&E plans. MDAP, MAIS, and Oversight programs require a TEMP or TEMP update to support the FRP decision. The TEMP update is staffed by AFOTEC/A-3 for 2-Ltr coordination and AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the TEMP update based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3. (See paragraph **3.16** for additional info.)

5.4. Operational Test & Evaluation Plans (IOT&E/QOT&E/FOT&E). The test plan describes what is necessary and how to execute the special topic aspects of the OT&E. Since each plan is developed for a specific program, copying a previously approved plan may not lead to the optimum program test solution and is discouraged. The Det/CCs and TDs are responsible for developing the test plans with support from the assigned test team and HQ staff. Template use is mandatory. Currently IA, electromagnetic environmental effects, interoperability, and global positioning system signal loss are addressed as Special Interest Items in the test plan template. For all OT&E plans the owning Det will staff the products for 2-Ltr coordination and AFOTEC/A-3 will coordinate the AFOTEC/CS review. The AFOTEC/CC or AFOTEC/ED may approve/sign the plan based on the program's ACAT level, UON status, or as determined by the AFOTEC/A-3.   Per DoD and AF requirements, the AFOTEC approved OT&E plans are provided to AF/TE and DOT&E not later than 60 days prior to test start. DOT&E determines, in writing, the test adequacy of the OT&E plan in accordance with United States Code (USC), Title 10, *Armed Forces,* and DODI 5000.02. If the DOT&E approval of test adequacy has not been received within a reasonable period of time after submittal of the test plan, the AFOTEC/A-3

should be advised and a letter of inquiry prepared for AFOTEC/CC's signature. (See paragraph **3.19** for additional info.)

5.5. Test Readiness Review. Prior to executing the IOT&E, the Det/CC is responsible for conducting a TRR. The purpose of the TRR is to advise the AFOTEC/CC on the readiness of the program and the test team, to receive acknowledgment of the PEO's certification memo from the AFOTEC/CC, and to obtain the AFOTEC/CC's formal approval to start operational test. Because the PEO's certification memo contains key information on the system's performance, stability, and limitations, the TRR will occur after the PEO's Operational TRR and certification. The TRR will occur no earlier than the date AFOTEC receives the PEO's certification memo, and no later than 15 days prior to the planned test start date. All TRR briefings are staffed by AFOTEC/A-3 for AFOTEC/CS coordination prior to review and approval by the AFOTEC/CC.

Section 5D—-Activities and Events.

5.6. Operational Utility Evaluation. Note: *The Test Concept Process is accomplished for every OT activity* (see paragraph **3.17** for additional info). An OUE is the evaluation of military capability conducted to demonstrate or validate new operational concepts or capabilities, upgrade components, or expand the mission or capabilities of existing or modified systems. (See paragraphs **4.23** and **4.24** for additional info.)

5.7. Initial Operational Test & Evaluation Execution. Note: *The Test Concept Process is accomplished for every OT activity* (see paragraph **3.17** for additional info). The Det/CC is responsible for all aspects of IOT&E execution. Following approval of the TRR and AFOTEC/CC acknowledgement of the PEO's certification of system readiness, the TD can begin IOT&E execution activities. The TD will ensure test execution in accordance with the approved test plan. (See paragraph **5.4** for additional info.)

5.7.1. Data Collection, Management, and Evaluation. The TD and the test team will execute the DMAP. During dedicated OT&E, the AFOTEC TD (or designated representative) chairs the JRMET and the TDSB. Participants include representatives from the supporting and operating commands, the DT&E and OT&E test teams, and when appropriate, system contractor personnel. Note: system development contractor personnel are prohibit from TDSB participation per Public Law (USC, Title 10). (See paragraphs 3.19.3. and 3.19.4. for additional info.)

5.7.2. Deficiency Reporting, Investigation and Resolution. The Det/CC is responsible for documenting system deficiencies found during execution of the IOT&E.

5.7.3. Last Test Event. Upon completion of the LTE, the TD submits a daily report as notification of the completed event to the A-3, Deputy A-3, and the A-3 workflow account. A-3 will forward the report to CS for situational awareness. The daily report triggers the coordination timeline for the final report. This highlights the coordination timeline for the Final Report which is the culmination of the OT&E process and is the single-most important product produced by AFOTEC. All Final Reports are approved and signed by the AFOTEC/CC either 42 days after LTE or 45 days prior to the MS decision. (See paragraph **4.20** for additional info.)

Chapter 6

AFOTEC ACTIVITIES FOLLOWING FRP/IOC/FIELDING DECISION

Section 6A—Overview

6.1. Introduction. The Det/CC, assisted by the Det technical advisor, is responsible for the activities and products following the FRP/IOC/Fielding decision. The activities include determining the need for any required follow-on OT&E and closing out the program. The Det/CC and TD need to review the activities discussed in Chapters 2, 3, 4, and 5 if assigned to an acquisition program following the FRP/IOC/Fielding decision.

Section 6B—Processes, Procedures and Products.

6.2. Follow-on Operational Test & Evaluation Criteria. FOT&E is the continuation of OT&E after IOT&E, QOT&E or MOT&E, and is conducted by AFOTEC. FOT&E answers specific questions about unresolved test issues. FOT&E verifies the resolution of I/Q/MOT&E deficiencies or shortfalls determined to have substantial or severe impact(s) on mission operations. FOT&E completes T&E of areas not finished or deferred during I/Q/MOT&E if these areas are determined to have substantial or severe impact(s) on mission operations. Additionally, FOT&E may be conducted on block upgrades, modifications, or pre-planned product improvements following completion of I/Q/MOT&E at the request of the MAJCOM and acceptance by the AFOTEC/CC. A follow-on OT activity not meeting the definition of FOT&E is designated as an force development evaluation (FDE) and conducted by the MAJCOM.

6.3. Closeout. The OT Closeout phase is required to complete AFOTEC involvement in a program and could also result in the need to inactivate an OL. See Table 6.1. for a list of products that may be required to complete the OT Closeout phase. AFOTEC/A-3 monitors the OT Closeout phase to ensure all actions are completed in a timely manner.

Table 6.1. OT Closeout/Change Activities.

Decision	Actions Needed
Program returned to Early Influence	Det prepares an updated tasking order (see paragraph **2.20.** for additional info).
Program complete, cancelled, or AFOTEC involvement ended	Det prepares Closeout Checklist, memorandum for record (MFR), and update letter to AF/TE, if required.
Program transfers from one Det to another	Losing Det prepares transfer checklist and MFR.

6.3.1. Test Program Closeout. OT closeout activities are directed in the program's TO and should be completed within 30 days after the decision to close the program or final report approval. The Det starts the process by reviewing the closeout checklist and identifying

those applicable to the program being closed. Both the closeout checklist and the MFR are available on the templates page on the AFOTEC Intranet. The TD is responsible for contacting all POCs and working the applicable closeout actions. The Det prepares the MFR and staffs it in TMT for 2-Ltr coordination (AFOTEC/A-1, AFOTEC/A-3, AFOTEC/A-5/8, Communication and Information Directorate and AFOTEC/A-4/7). The Det sends the coordinated memo to AFOTEC/A-3; AFOTEC/A-3 then uses it to close out the program on the AFOTEC Intranets. Once a program is closed out, future upgrades to the system (or program increments) go through the involvement and test design processes to determine AFOTEC's level of involvement. (Contact AFOTEC/A-3 for additional information.)

6.3.2. Inactivation of Operating Location. As part of a test program's closeout activities, an OL may need to be inactivated. The owning AFOTEC Det or Directorate will ensure the TD or OL Chief contacts AFOTEC/A-8X to begin the inactivation process. AFOTEC/A-8X will work with the TD or OL Chief to develop an inactivation report and is responsible for staffing and AFOTEC/CS approval.

6.3.3. Test Data Disposition. The Air Force Records Information Management System RDS states that raw data can be destroyed when no longer needed. Test teams should consult their tech advisor when contemplating what to do with raw data or whether it will be needed for follow-on tests or other reasons. Because of space limitations, test teams should convert large amounts of raw data onto CDs for easier storage. The Det functional area records manager assists the TD with the closeout of the program case file on the official records management network drive and the transfer of all other program records to the AFOTEC records manager. A copy of the closed program case file will be sent to the AFOTEC History Office to be archived.

6.3.4. Funds Closeout Procedures. The resource manager is the POC for assistance with funds closeout procedures. A funds closeout procedures checklist is located on the AFOTEC Intranet.

DAVID J. EICHHORN
Major General, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AF Doctrine Document (AFDD) 1-1 – *Leadership and Force Development*

AFI 10-601 – *Capabilities-Based Requirements Development*

AFI 16-1002 – *Modeling and Simulation (M&S) Support to Acquisition*

AFI 21-102 – *Depot Maintenance Management*

AFI 25-201 – *Support Agreements Procedures*

AFI 31-401 – *Information Security Program Management*

AFI 33-324 – *The Information Collections and Reports Management Program: Controlling Internal, Public, and Interagency Air Force Information Collections*

AFI 63-101 – *Acquisition and Sustainment Life Cycle Management*

AFI 90-802 – *Risk Management*

AFI 99-103 – *Capabilities-Based Test and Evaluation*

AFMAN 33-363 *– Management of Records*

AFMAN 63-119 – *Certification of System Readiness for Dedicated Operational Test and Evaluation*

AFMD 14 – *Air Force Operational Test and Evaluation Center (AFOTEC)*

AFOTECI 36-2201 – *Management of the AFOTEC Training Program*

AFOTEC Pamphlet (AFOTECPAM) 99-104 – *AFOTEC Operational Suitability Test and Evaluation Guide*

AFI 11-401 AFOTECSup *– Aviation Management*

AFI 31-401 AFOTECSup – *The AFOTEC Information Security Program*

AFOTEC OT&E Guide

AFOTEC Program Manager's Operational Test Toolkit

AFPD 10-23 – *Air Force Innovation Program*

AFPD 63-1 – *Acquisition and Sustainment Life Cycle Management*

AFPD 99-1 – *Test and Evaluation Process*

CJCSI 3170.01 H – *Joint Capabilities Integration and Development System*

CJCSI 6212.01 E – *Interoperability and Supportability of Information Technology and National Security Systems*

CNSSI 1253 *– Security Categorization and Control Selection for National Security Systems*

DAG – *Defense Acquisition Guidebook*

DCID 6/3 – *Protecting Sensitive Compartmented Information within Information Systems*

DODD 5000.01 - *The Defense Acquisition System*

DODD 5000.59 – *DoD Modeling and Simulation (M&S) Management*

DODD 5134.01 - *Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L))*

DODD 8500.01E – *Information Assurance (IA)*

DODI 4000.19 – *Interservice and Intragovernmental Support*

DODI 5000.02 – *Operation of the Defense Acquisition System*

DODI 8500.2 - *Information Assurance (IA) Implementation*

DODM 5200.1 V1 - *DoD Information Security Program: Overview, Classification, and Declassification*

DODM 5200.1 V2 - *DoD Information Security Program: Marking of Classified Information*

DODM 5200.1 V3 - *DoD Information Security Program: Protection of Classified Information*

DODM 5200.1 V4 - *DoD Information Security Program: Controlled Unclassified Information (CUI)*

Intelligence Community Directive 503 – *Intelligence Community Information, Technology Systems Security Risk Management, Certification and Accreditation*

JAFAN Manual 6/3 – *Special Access Program, Security Manual, Revision 1*

ISOO Marking Classified National Security Information Manual

Intelligence Community Authorized Classification and Control Markings (CAPCO) Register and Manual

HOI 63-1 – *Headquarters Air Force Guidance for Preparing Program Management Directives*

Joint Pub 1-02 – *DoD Dictionary of Military and Associated Terms*

NIST 800-37 – *Certification and Accreditation Process*

T.O. 00-35D-54 – *USAF Deficiency Reporting and Investigating System*

USAF Security Marking Guide for Special Access Programs

USC, Title 10 – *Armed Forces*

USC, Title 10, Chapter 4 §139 – *Director of Operational Test and Evaluation*

USC, Title 10, Chapter 137 §2302(5) – *Major System: Definitional Threshold Amounts*

USC, Title 10, Chapter 139 §2366 – *Major Systems and Munitions Programs: Survivability Testing and Lethality Testing Required Before Full-Scale Production*

USC, Title 40 – *Public Buildings, Property, and Works*

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

DD Form 1144, *Support Agreement*

SAP Form 6, *Notification of Foreign Travel*

SAP Form 16, *Word Processor and Personal Computer Data Sheet*

SAP Form 26, *Equipment/Software Movement Request*

Abbreviations and Acronyms

2-Ltr—2 Letter

ACAT—acquisition category

ACTD—Advanced Concept Technology Demonstration

ADM—acquisition decision memorandum

AF/A—5R - AF Requirements Office

AF/TE—Air Force Test and Evaluation

AFDD—AF Doctrine Document

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFMC—Air Force Material Command

AFMD—Air Force Mission Directive

AFOTEC—Air Force Operational Test and Evaluation Center

AFOTEC/A—1 - Manpower and Personnel Directorate

AFOTEC/A—1W - Manpower and Personnel (Operations) Division

AFOTEC/A—2/9 - Analyses, Assessments and Lessons Learned Directorate

AFOTEC/A—2N – Intelligence Division

AFOTEC/A—9E - Mission Support Division

AFOTEC/A—3 - Operations Directorate

AFOTEC/A—3Z - Special Access Programs Division

AFOTEC/A—4/7 - Installations and Mission Support Directorate

AFOTEC/A—5/8 - Plans and Programs Directorate

AFOTEC/A—5R -Test Infrastructure Division

AFOTEC/A—8R - Long Range Investments Division

AFOTEC/A—8X - Strategic Plans and Policy Division

AFOTEC/CC—AFOTEC Commander

AFOTEC/CCX—Commander's Action Group

AFOTEC/CS—Command Staff

AFOTEC/CV—AFOTEC Vice Commander

AFOTEC/CVI—Information Protection

AFOTEC/ED—Executive Director

AFOTEC/SE—Safety

AFOTECI—AFOTEC Instruction

AFOTECPAM—AFOTEC Pamphlet

AFOTTP—Air Force Operational Tactics, Techniques, and Procedures

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFROC—Air Force Requirements Oversight Council

AIS—automated information system

ANG—Air National Guard

AoA—analysis of alternatives

APB—Acquisition Program Baseline

ASD(C3I)—Assistant Secretary of Defense for Command, Control, Communication and Information

ATD—advanced technology demonstration

ATO—Authority to Operate

ATPA—AFOTEC Test Program Applications

BBP—bullet background paper

C&A—certification and accreditation

C4I—Command, Control, Communications, Computers, and Intelligence

CAPCO—Controlled Access Program Coordinating Office

CDD—capability development document

CJCSI—Chairman, Joint Chiefs of Staff Instruction

CNSSI—Committee on National Security Systems Instruction

CNWDI—critical nuclear weapons design information

COA—course of action

COI—critical operational issue

CONOPS—concept of operations

CPD—capability production document

DAB—Defense Acquisition Board

DAC—designated acquisition commander

DAE—Defense Acquisition Executive

DAG—Defense Acquisition Guidebook

DC—derivative classifier

DCID—Director of Central Intelligence Directive

Det—detachment

Det/CC—Det Commander

DIACAP—DoD Information Assurance Certification and Accreditation Process

DMAP—data management and analysis plan

DoD—Department of Defense

DODD—Department of Defense Directive

DODI—Department of Defense Instruction

DODM—Department of Defense Manual

DOE—Design of Experiments

DOT&E—Director, Operational Test and Evaluation

DRI&R—Deficiency Reporting, Investigation and Resolution

DT—developmental test

DT&E—developmental test and evaluation

DTIC—Defense Technical Information Center

DTP—detailed test procedure

EOA—early operational assessment

ESOH—environment, safety, and occupational health

ESOHCB—environment, safety, and occupational health certification board

FCT—foreign comparative test

FDE—force development evaluation

FOT&E—follow-on operational test and evaluation

FRD—formerly restricted data

FRP—full-rate production

FY—fiscal year

HOI—Headquarters Operating Instruction

HPT—high performance team

HQ—headquarters

IA—information assurance

IATO—interim authorization to operate

ICD—initial capabilities document

IL—involvement letter

IOC—initial operational capability

IOT&E—initial operational test and evaluation

IP—information protection

ISOO—Information Security Oversight Office

ISP—information support plan

IT—information technology

IT&E—integrated test and evaluation

ITD—initial test design

ITT—integrated test team

JAFAN—Joint Air Force-Army-Navy

JCIDS—Joint Capabilities Integration and Development System

JCTD—Joint concept technology demonstration

JRMET—joint reliability and maintainability evaluation team

JT&E—Joint Test and Evaluation

KPP—key performance parameter

L2—lessons learned

LCMP—life cycle management plan

LFT&E—live fire test and evaluation

LNO—Liaison Officers

LRIP—low-rate initial production

LTE—last test event

M&S—modeling and simulation

MAC—mission assurance category

MAIS—major automated information system

MAJCOM—major command

MDA—milestone decision authority

MDAP—major defense acquisition program

MDD—Material Development Decision

MFR—memorandum for record

MOA—memorandum of agreement

MOE—measure of effectiveness

MOS—measure of suitability

MOT&E—multiservice operational test and evaluation

MOU—memorandum of understanding

MS—Milestone

MSSP—modeling and simulation support plan

NASIC—National Air and Space Intelligence Center

NATO—North Atlantic Treaty Organization

NC2- ESI—Nuclear Command and Control-Extremely Sensitive Information

NIPRNet—non-secure internet protocol router network

NIST—National Institute of Standards and Technology

NLT—no later than

NR—KPP - Net-Ready Key Performance Parameter

NSS—National Security Space

NTTR—Nevada Test and Training Range

OA—operational assessment

OC—operational capability

OCA—original classification authority

OL—operating location

OPSEC—Operations Security

ORM—operational risk management

OSD—Office of the Secretary of Defense

OT—operational test

OT&E—operational test and evaluation

OTA—operational test agency

OUA—operational utility assessment

OUE—operational utility evaluation

PE—program element

PEO—program executive office

PM—program manager

PMD—program management directive

POA&M—plan of action and milestones

POC—point of contact

QOT&E—qualification operational test and evaluation

R&M—reliability and maintainability

RD—restricted data

RDS—Records disposition schedule

RDT&E—Research, Development, Test and Evaluation

RFP—request for proposal

RM—Risk Management

RRB—requirements review board

RSR—requirement strategy review

RTO—responsible test organization

SAE—Service Acquisition Executive

SAM—Support Agreement Manager

SAP—Special Access Programs

SCG—security classification guide

SCI—sensitive compartmented information

SIPRNet—secure internet protocol router network

SM—security manager

SPO—System Program Office

STA—system threat assessment

Stan/Eval—Standardization and Evaluation

STAR—system threat assessment report

T&E—test and evaluation

T.O.—technical order

TD—test director

TDS—technology development strategy

TDSB—Test Data Scoring Board

TDY—temporary duty

TEMP—test and evaluation master plan

TES—test and evaluation strategy

TMT—Task Management Tool

TO—tasking order

TPM—test program management

TR—Technical Reviews

TRM—test resource manager

TRP—test resource plan

TRR—test readiness review

TTP—tactics, techniques, and procedures

UON—urgent operational need

USC—United States Code

USD(AT&L)—Under Secretary of Defense for Acquisition, Technology and Logistics

VIDOC—Visual Information Documentation

VSTAR—virtual system threat assessment report

Terms

Accreditation— The official determination that a model or simulation (or other test capability) is acceptable for a specific purpose. (DODD 5000.59, *DoD Modeling and Simulation (M&S) Management*)

Acquisition— The procurement of real property or services by any means exclusive of lease agreements. The process consists of planning, designing, producing, and distributing a system or equipment. Acquisition includes the concept definition or exploration, demonstration and validation (including prototype development and test), full-scale development or LRIP, FRP or initial deployment, and operations support.

Acquisition Category (ACAT)— Acquisition categories determine the level of review, decision authority, and applicable procedures. They facilitate decentralized decision making and execution, and compliance with statutory imposed requirements. There are three ACATs based on research, development, T&E (RDT&E) and/or procurement costs stated in fiscal year (FY) 2000 dollars.

Table A1.1 **ACAT.**—**Acquisition Community** — All personnel involved in the conceptualization, initiation, design, development, test, contracting, production, deployment, sustainment, logistics, support, modification, and disposal of weapon and other systems, supplies, or services to satisfy DoD needs, and intended for use in or in support of military missions.

Acquisition Decision Memorandum (ADM)— A memorandum signed by the MS decision authority that documents the decisions made and the exit criteria established as the result of a MS decision review or in-process review.

Acquisition Process— The system of discrete, logical phases separated by major decision points called MSs. The acquisition process begins when broad mission capability needs are identified

which cannot be satisfied with non-materiel solutions. (AFI 63-101, *Acquisition and Sustainment Life Cycle Management*)

Acquisition Program— A directed, funded effort that is designed to provide a new or improved materiel capability in response to a validated need.

Acquisition Program Baseline (APB)— A succinct document that details cost, schedule, and performance (including support) parameters, and program breach information. It establishes the commitment between the program manager and the MS Decision Authority. (AFI 63-101)

Acquisition System— A single uniform system whereby all equipment, facilities, and services are planned, designed, developed, tested, acquired, maintained, and disposed of within the DoD. The system encompasses establishing and enforcing policies and practices that govern acquisitions, to include documenting mission needs and establishing performance goals and baselines; determining and prioritizing resource requirements for acquisition programs; planning and executing acquisition programs; directing and controlling the acquisition review process; developing and assessing logistics implications; contracting; monitoring the execution status of approved programs; and reporting to Congress. (DODD 5134.01, *Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L))*)

Analysis— The detailed examination and application of disciplined techniques (for example, mathematics or statistics) to anything complex to understand its nature or determine its essential features.

Analysis of Alternatives (AoA)— An analysis of the estimated costs and operational effectiveness of alternative materiel systems to meet the need and the associated program for acquiring each alternative.

Attribute— A quantitative or qualitative characteristic of an element or its actions.

Automated Information System (AIS)— A combination of computer hardware and software, data, or telecommunications that performs functions such as collecting, processing, transmitting, and displaying information. Excluded are computer resources, both hardware and software that are physically part of, dedicated to, or essential in real time to the mission performance of weapons systems.

Availability— A measure of the degree to which an item is in the operable and committable state at the start of a mission when the mission is called for at an unknown (random) time.

Battlespace— The environment, factors, and conditions that are understood to successfully apply combat power, protect the force, or complete the mission. The battlespace includes the air, land, sea, space, and the included enemy and friendly forces; facilities; terrestrial and space environment; terrain; the electromagnetic spectrum; and the information environment within the operational areas and areas of interest.

Beyond Low Rate Initial Production (LRIP) Report— An assessment of the adequacy of the operational T&E and the effectiveness and suitability of a weapon system for combat, prepared by the DOT&E, and submitted to the defense acquisition executive (DAE) and then to the Congress.

Capability— The capacity to be used, treated, or developed for a specific purpose. Capability descriptions contain the following elements: Key characteristics (attributes) with appropriate parameters and metrics. (CJCSI 3170.01H)

Capability Development Document (CDD)— The warfighter's primary means of providing authoritative, measurable and testable requirements for the system development and demonstration phase of an acquisition program. The CDD provides the operational performance attributes necessary for the acquisition community to design a proposed system and establish a program baseline. The CDD states performance attributes, including KPP that guides the development and demonstration of the proposed increment. (CJCSI 3170.01H)

Capability Production Document (CPD)— The warfighter's primary means of providing authoritative, measurable and testable requirements for the production/fielding phase of an acquisition program. A CPD is finalized after critical design review and is validated and approved prior to the MS C acquisition decision. The CPD provides the operational performance attributes necessary for the acquisition community to produce a specified quantity of a single increment of a specific system. The CPD states performance attributes, including KPP, to guide the production and deployment of the current increment. Since a CPD applies to only a single increment of a program's development, the performance attributes and KPPs shall apply only to the increment described in the CPD (or, in a single step to full capability, to the entire system). (CJCSI 3170.01H)

Characteristic— 1. Pertaining to, indicating, or constituting a distinctive <u>quality</u> or disposition. 2. A distinguishing feature or <u>attribute.</u>

Compatibility— The capability of two or more items or components of equipment or materiel to exist or function in the same system or environment without mutual interference. (CJCSI 6212.01E)

Concept of Operations (CONOPS)— Verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. The concept of operations frequently is embodied in campaign plans and operation plans. In the latter case, particularly when the plans cover a series of connected operations to be carried out simultaneously or in succession. The concept is designed to give an overall picture of the operation. It is included primarily for additional clarity of purpose. Also called commander's concept (Joint Pub 1-02, *DoD Dictionary of Military and Associated Terms*).

Confidentiality Level— Applicable to DoD information systems, the confidentiality level is primarily used to establish acceptable access factors, such as requirements for individual security clearances or background investigations, access approvals and need-to-know determinations; interconnection controls and approvals; and acceptable methods by which users may access the system (e.g., intranet, Internet, wireless). The DoD has three defined confidentiality levels: classified, sensitive and public. (DODI 8500.2, *Information Assurance (IA) Implementation*)

Core Team— Working team established and tasked to perform the activities of AFOTEC's Early Influence and Initial Test Design. The core team is usually comprised of representatives from AFOTEC/A-2/9, AFOTEC/A-3, AFOTEC/A-5/8, Det, and others. The team is initially designated by the initial tasking order.

Critical Operational Issue (COI)— AFOTEC defines a COI as a critical element or operational objective of the mission that must be examined in OT&E in order to determine the system's overall capability to support mission accomplishment as determined by effectiveness, suitability, and other applicable operational considerations.

Defense Acquisition Board (DAB)— The senior DoD acquisition review board, chaired by the Office of the USD(AT&L). The Vice Chairman Joint Chiefs of Staff is the Vice Chair. Assists the DAE with MS and program reviews, policy formulation, and acquisition resource recommendations. The DAB is the primary forum for DoD components to provide advice and assistance concerning acquisition matters through the DAE to the Secretary of Defense.

Defense Acquisition Executive (DAE)— The principal advisor to the Secretary of Defense on all matters pertaining to the DoD Acquisition System. USD(AT&L) is the DAE.

Deficiency— A condition that prevents successful mission accomplishment or degrades a system's operational effectiveness or operational suitability. (T.O. 00-35D-54)

Deficiency Report— A report used to identify, document, and track system deficiency and enhancement data while a system is in advanced development, T&E, or operational transition. (T.O. 00-35D-54)

Design of experiments (DOE)— is a powerful applied statistics tool that allows for multiple input factors to be selected for analyzing and determining their effect on a desired output or response.

Designated Acquisition Commander (DAC)— The individual who functions as the MDA on programs not assigned to a PEO. The commanders of AFMC or AFSPC product centers and air logistics centers act in the capacity of a DAC. DACs, like PEOs, are accountable to the SAE. (AFPD 63-1, *Acquisition and Sustainment Life Cycle Management*)

Developmental Test and Evaluation (DT&E)— T&E conducted to evaluate design approaches, validate analytical models, quantify contract technical performance and manufacturing quality measure progress in system engineering design and development, minimize design risks, predict integrated system operational performance (effectiveness and suitability) in the intended environment, and identify system problems (or deficiencies) to allow for early and timely resolution or correction. Decision-makers use DT&E results to minimize design risk, whereas OT&E evaluates military utility, and system effectiveness and suitability. DT&E includes contractor testing (AFPD 99-1).

DoD Information Assurance Certification and Accreditation Process (DIACAP)— The DoD processes for identifying, implementing, validating, certifying, and managing IA capabilities and services, expressed as IA Controls, and authorizing the operation of DoD information systems in accordance with statutory, Federal and DoD requirements.

Early Influence— Early Influence is AFOTEC's formalized approach to refine capability requirements and acquisition strategies, and then develop early IT&E strategies and plans. We don't define requirements, but we can help refine them. If we get involved early, even before MS A, we can ensure requirements are testable, measurable, and operationally relevant. Typically starting before MS A, involvement by AFOTEC intended to inject operational T&E issues and concerns as soon as possible in the acquisition program. The intent is to achieve cost and schedule savings by making recommendations benefiting operational effectiveness and suitability. An element of early influence is AFOTEC's participation in HPTs for capability requirements documents.

Early Operational Assessment (EOA)— An operational assessment conducted prior to, or in support of, MS B. An EOA assesses the most promising design approach sufficiently early in the acquisition process to ensure it has the potential to fulfill user requirements.

Effectiveness— See Operational Effectiveness.

Electromagnetic Environmental Effects— The impact of the electromagnetic environment upon the operational capability of military forces, equipment, systems, and platforms. It encompasses all electromagnetic disciplines, including electromagnetic compatibility/electromagnetic interference; electromagnetic vulnerability; electromagnetic pulse; electronic protection; hazards of electromagnetic radiation to personnel, ordnance, and volatile materials; and natural phenomena effects of lightning and p-static (precipitation static). (Joint Pub 1-02)

Electronic Countermeasures— That division of electronic warfare involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum. It includes electronic jamming and deception. (Joint Pub 1-02)

Evaluation— The review and analysis of qualitative or quantitative data obtained from design review, hardware inspection, testing, or operational usage of equipment.

Evaluation Criteria— Standards by which accomplishments of required technical and operational effectiveness and/or suitability characteristics or resolution of critical operational issues may be assessed. Evaluation criteria are composed of a metric and a threshold. They can be either user-established criteria or an identified standard.

Evolutionary Acquisition— Evolutionary acquisition is the preferred DoD strategy for rapid acquisition of mature technology for the user. An evolutionary approach delivers capability in increments, recognizing, up front, the need for future capability improvements. The objective is to balance needs and available capability with resources, and to put capability into the hands of the user quickly. The success of the strategy depends on phased definition of capability needs and system requirements, and the maturation of technologies that lead to disciplined development and production of systems that provide increasing capability over time.

Evolutionary acquisition requires collaboration among the user, tester, and developer. In the evolutionary acquisition process, a needed operational capability is met over time by developing several increments, each dependent on available mature technology. Technology development preceding initiation of an increment shall continue until the required level of maturity is achieved, and prototypes of the system or key system elements are produced. Successive Technology Development Phases may be necessary to mature technology for multiple development increments.

Each increment is a militarily useful and supportable operational capability that can be developed, produced, deployed, and sustained. Each increment will have its own set of threshold and objective values set by the user. Block upgrades, pre—planned product improvement, and similar efforts that provide a significant increase in operational capability and meet an acquisition category threshold specified in DODI 5000.02 shall be managed as separate increments under the requirements of DODI 5000.02. (DODI 5000.02)

Exit Criteria— Program specific accomplishments that are satisfactorily demonstrated before an effort or program can progress further in the current acquisition phase, or transition to the next

acquisition phase. Exit criteria may include such factors as critical test issues, the attainment of projected growth curves and baseline parameters, and the results of risk reduction efforts deemed critical to the decision to precede further. Exit criteria supplement minimum required accomplishments (e.g., beyond LRIP report, cost as an independent variable objective, APB parameters) are specific to each acquisition phase.

Factor— A factor is a variable of the environment or situation that affects task performance. (AFDD 1-1).

Follow—**on Operational Test & Evaluation (FOT&E) —** Continuation of IOT&E or QOT&E. FOT&E answers specific questions about unresolved COIs and test issues, verifies the resolution of deficiencies determined to have substantial or severe impact on mission operations, or completes areas not finished during the I/QOT&E. Requirements for FOT&E are documented in an approved AFOTEC OT&E report prior to the planning of the FOT&E.

Force Development Evaluation (FDE)— FDE is performed by MAJCOM operational test organizations during fielding and sustainment or in support of MAJCOM-managed system acquisition. If AFOTEC conducted OT&E, an FDE is used to evaluate and verify the resolution of previously identified deficiencies or shortfalls that were not rated in the OT&E final report as having a substantial or severe impact on mission operations. If AFOTEC did not conduct OT&E, FDE can be done in lieu of OT&E as needed to support acquisition program decisions and MSs.

Foreign Comparative Test (FCT)— An OSD-funded program that allows each Service to test foreign-developed systems, components, equipment items, or technologies. The goal is to determine if foreign items meet validated needs and requirements, and if they are viable candidates for a competitive acquisition.

Full—**Rate Production (FRP) —** The period encompassing the process of uniting facilities, hardware and software, personnel, and procedural publications necessary for manufacturing and delivering an acceptable integrated system to the using and supporting commands.

High Performance Team (HPT)— The HPT is the preferred method to develop an ICD Stage I/ICD Stage II, CDD, or CPD, and is used unless waived by AF/A-5R at the RSR. An HPT consists of a lead (normally the sponsor), core and support team members. The HPT accelerates the documentation process and increases the potential for a quality document. Its overarching objective is to capture, articulate, and document the operator's operational requirements in minimum time, while achieving stakeholder buy-in. AFOTEC is a core member of HPTs.

Human Engineering— The application of knowledge of human beings' capabilities and limitations to the planning, design, development, and testing of aerospace systems, equipment, and facilities to achieve optimum personnel safety, comfort, and effectiveness compatible with systems requirements.

Human Factors— The systematic application of relevant information about human abilities, characteristics, behavior, motivation, and performance. It includes principles and applications in the areas of human engineering, anthropometrics, personnel selection, training, life support, job performance aids, and human performance evaluation.

Implementing Command— The lead command or agency designated by the SAE to manage an acquisition program.

Increment or Block— (See Evolutionary Acquisition).

Information Assurance (IA)— Measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. The measures include providing for restoration of information systems by incorporating protection, detection and reaction capabilities. (DODD 8500.01E) Availability relates to the timely, reliable access to data and information services for authorized users. Integrity is the quality of an information system reflecting the logical correctness and reliability of the operating system; the logical completeness of the software and software implementing the protection mechanism, and the consistency of the data structures and occurrence of the stored data. In a formal security mode, integrity is interpreted more narrowly to mean protection against unauthorized modification or destruction of information. Authentication is a security measure designed to establish the validity of a transmission, message, or originator, or a means of verifying an individual's authorization to receive specific categories of information. Confidentiality is assurance that information is not disclosed to unauthorized entities or processes. Non-repudiation is assurance the sender of data is provided with proof of delivery and the recipient is provided with proof of the sender's identity, so neither can later deny having processed the data. (also DODD 8500.01E)"

Information Protection (IP)— The safeguarding of any data/information that potentially reveals US vulnerabilities, capabilities or capability gaps, or falls under any of the exemption categories of the Freedom of Information Act. Information protection includes the correct classification, marking, handling, and destruction of AFOTEC-generated products. AFOTEC generally has three categories of information: unclassified, controlled unclassified (e.g., for official use only, export controlled) and classified.

Initial Capabilities Document (ICD)— Describes capability gaps that exist in joint warfighting functions as described in the applicable joint concepts and integrated architectures. The ICD defines the capability gap in terms of the functional area, the relevant Range of Military Operations, and time. The ICD captures the results of a well-framed functional analysis. The ICD documents the evaluation of materiel approaches that are proposed to provide the required capability. The ICD further proposes a recommended materiel approach based on analysis of the different materiel approaches. The ICD describes how the recommended approach best satisfies the desired joint capability. (CJCSI 3170.01H)

Initial Operational Capability (IOC)— The first attainment of the capability to employ effectively a weapon, item of equipment, or system of approved specific characteristics, with the appropriate number, type, and mix of trained and equipped personnel necessary to operate, maintain, and support the system.

Initial Operational Test and Evaluation (IOT&E)— An independent and dedicated operational T&E conducted in as realistic an operational environment as possible to estimate the prospective system's overall operational capability determined by effectiveness, suitability, and other operational considerations. In addition, OT&E provides information on organization, personnel requirements, doctrine, and tactics. It may also provide data to support or verify material in operating instructions, publications, and handbooks.

Initial Test Design (ITD)— Initial test design is another focus of Early Influence. It is a systematic approach to take the test teams from capability requirements to credible OT&E constructs which, when executed, will yield the final data required by decision-makers to make

program decisions. ITD is a process to provide a standardized approach for the corporate allocation of resources among all of the test programs managed by AFOTEC and to identify major test capability requirements and shortfalls.

Innovation Program— Can include: pre-acquisition activities (Advanced Concept Technology Demonstration (ACTD), advanced technology demonstration (ATD), FCT, non-developmental item); warfighter assessments (battlelab and Combatant Commander initiatives, joint and service experiments); doctrine/TTP development (joint T&E (JT&E)); exercise activities (Joint Chiefs of Staff, Combatant Commander, service, federal). (AFPD 10-23, *Air Force Innovation Program*)

Integrated Test & Evaluation (IT&E)— An efficient approach to T&E, executed with the deliberate intent and planning to use specific test events and activities for both developmental test and operational test analysis and reporting, when there are clear cost and/or schedule advantages. The high cost or lack of sufficient test articles may provide an overall benefit for DT&E and OT&E teams to share test resources and data. IT&E usually ends with a phase of dedicated OT&E. AFOTEC always considers doing IT&E for all programs. The restriction for contractor involvement in USC, Title 10 applies only to dedicated OT&E.

Integrated Test Team (ITT)— The ITT is established to involve all T&E stakeholders in a program as early as possible and to facilitate coordinated and IT&E planning. The ITT replaces the test plan working group and may also be referred to as a T&E working-level integrated product team. The ITT is co-chaired by the acquisition program manager and the OTA. The ITT is the body that develops the required T&E documentation for the program (T&E Strategy, TEMP, etc.) and continues through on IT&E execution and reporting. A charter outlining roles and responsibilities of members is developed for the ITT. Typically, the AFOTEC TD is the OT&E representative on the ITT.

Integration— The arrangement of *systems* in an architecture so that they function together in an efficient and logical way. (CJCSI 6212.01E)

Interoperability— The ability of systems, units, or forces to provide and receive services from other systems, units, or forces, and to use the services so interchanged to enable them to operate effectively together. The conditions achieved among communications-electronics systems or communications-electronics items when information or services can be exchanged directly between them and/or their users.

Involvement Letter (IL)— Developed by AFOTEC/A-3 and approved by AFOTEC/CC, the IL formally notifies associated outside agencies of AFOTEC's decision to be involved or non-involved in a particular program.

Joint Concept Technology Demonstration (JCTD)— 1) One of three technology transition mechanisms; the other two are ATDs and experiments. JCTDs are used to determine the military utility of proven technology and to develop the concept of operations that optimize effectiveness. JCTDs are not themselves acquisition programs, but are designed to provide a residual, usable capability upon completion, and/or transition into acquisition programs (AFI 10-601). 2) A means of rapidly demonstrating the use of advanced technologies to address urgent military needs.   JCTDs are designed to rapidly transfer technology from developers to users. Demonstrations are jointly developed and implemented with the operational user and development communities as key participants. The fundamental goals are to provide a sound

basis for investment decisions, and provide residual operational capabilities. JCTDs are partially funded by OSD.

Joint Program— Any defense acquisition system, subsystem, component, or technology program involving formal management or funding by more than one DoD component during any phase of a system's life cycle.

Joint Reliability and Maintainability Evaluation Team (JRMET)— The team responsible for collecting, analyzing, and categorizing reliability and maintainability (R&M) data during DT&E and OT&E. It is chaired by the single manager (or designated representative) and includes representatives from the supporting and operating commands, the DT&E and OT&E test teams, and, when appropriate, system contractor personnel as nonvoting members. (See AFOTECPAM 99-104, *AFOTEC Operational Suitability Test and Evaluation Guide,* for more information.)

Joint Test and Evaluation (JT&E)— JT&E candidate programs are nominated by the Services, and directed and funded by OSD. JT&E programs evaluate technical or operational concepts that are applicable to more than one Service. They usually do not result in the acquisition of systems.

Key Performance Parameters (KPP)— KPPs are those system attributes considered essential for successful mission accomplishment. The CDD should only contain a limited number of KPPs (approximately 8 or fewer) that capture the parameters needed to reach the overall desired capabilities for the system. Failure to meet a CDD KPP threshold can be cause for the system selection to be reevaluated, the program to be reassessed or terminated, or the content of production increments modified. Interoperability is a KPP in every increment of a program.

Last Test Event (LTE)— The LTE is the last specific event of a test (e.g., the last sortie, the conclusion of the JRMET, the completion of data analysis, etc.) The LTE is documented in the test plan (Section 3, Scope), added to the program's AFOTEC-Intranet Test Management page, and briefed at the TRR.

Lead Service— The Service designated by USD(AT&L) to be responsible for management of a system acquisition involving two or more DoD components in a joint program.

Lethality— The ability of a munitions system (or laser, high power microwave) to cause damage that results in the loss or degradation of the ability of a target system to complete its designated mission(s).

Life Cycle Management Plan (LCMP)— The LCMP integrates both the acquisition and sustainment strategies from concept development to disposal and provides all product support requirements of a supported system, subsystem, or major end item. The LCMP lays out full life cycle product support strategies; and maximizes system effectiveness from the perspective of the warfighter.

Live Fire Test and Evaluation (LFT&E)— A test within the OSD approved LFT&E strategy involving the firing of actual munitions at target components, subsystems, subassemblies, or system-level targets (which may or may not be configured for combat) to examine personnel casualty, vulnerability and/or lethality issues. (USC, Title 10, Chapter 139 §2366)

Logistics Supportability— The degree to which the planned logistics support allows the system to meet its availability and wartime usage requirements. Planned logistics support includes the

following: test, measurement, and diagnostic equipment; spare and repair parts; technical data; support facilities; transportation requirements; training; manpower; and software.

Low—Rate Initial Production (LRIP) — The minimum number of systems (other than ships and satellites) to provide production representative articles for operational T&E, to establish an initial production base, and to permit an orderly increase in the production rate sufficient to reach full-rate production upon successful completion of operational testing.

Maintainability— The ability of an item to be retained in or restored to specified conditions when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair.

Major Automated Information System (MAIS)— An AIS acquisition program that is 1) designated by ASD(C3I) as a MAIS, or 2) estimated to require program costs in any single year in excess of $30 million in FY 1996 constant dollars, total program costs in excess of $120 million in FY 1996 constant dollars, or total life-cycle costs in excess of $360 million constant dollars. MAISs do not include highly sensitive classified programs (as determined by the Secretary of Defense).

Major System— A combination of elements that functions together to produce the capabilities required to fulfill a mission need. The elements may include hardware, equipment, software, or any combination thereof, but excludes construction or other improvements to real property. A system shall be considered a major system if it is estimated by USD(AT&L) to require an eventual total expenditure for RDT&E of more than $140 million in FY 2000 constant dollars or for procurement of more than $660 million in FY 2000 constant dollars (USC, Title 10, Chapter 137 §2302(5), *Major System: Definitional Threshold Amounts*).

Measure— A measure is a device designed to convey information about an entity being addressed. It is the dimensions, capacity, or amount of an attribute or characteristic an entity possesses. A measure is used to provide the basis of comparison or for describing varying levels of an attribute.

Measure of Effectiveness (MOE)— A measure of operational success that must be closely related to the objective of the mission or operation being evaluated. For example, the number of enemy submarines sunk or enemy tanks destroyed may be satisfactory MOEs if the objective is to destroy such weapon systems. However, if the real objective is to protect shipping or an infantry battalion, then the best course of action might be one that results in fewer friendly submarines or tanks actually killed. A meaningful MOE must be quantifiable and measure to what degree the real objective is achieved.

Measure of Suitability (MOS)— A measure of a system's ability to support mission/task accomplishment (identified by the COI) with respect to reliability, availability, maintainability, transportability, supportability, and training.

Memorandum of Agreement (MOA)— An agreement that defines areas of responsibility and agreement between two or more parties, normally at headquarters or MAJCOM level. MOAs normally document the exchange of services and resources and establish parameters from which support agreements may be authorized. (AFI 25-201)

Memorandum of Understanding (MOU)— An umbrella agreement that defines broad areas of mutual understanding between two or more parties, normally at MAJCOM or higher level. (AFI 25-201)

Metric— A metric is a unit of measure that coincides with a specific method, procedure, or analysis (e.g. function or algorithm). The function results in a distance (in an abstract sense such as a relationship, not necessarily a physical sense) between two entities.

Milestone (MS)— Major management decision points in the system acquisition decision process requiring OSD and (or) DoD component program review. MSs include both DAB and DoD component equivalent program reviews.

Milestone Decision Authority (MDA)— The individual designated according to criteria established by USD(AT&L), or by ASD(C3I) for AIS programs, to approve entry of an acquisition program into the next phase.

Mission— A duty assigned to an individual or unit: a task (Joint Pub 1-02). A combat operation assigned to an individual or unit.

Mission Assurance Category (MAC)— Reflects the importance of information relative to the achievement of DoD goals and objectives, particularly the warfighter's combat mission. The MAC is primarily used to determine the requirements for availability and integrity (see definition of information assurance). (DODD 8500.01E)

Modeling and Simulation (M&S)— The discipline that comprises the development and/or use of models and simulations; M&S is highly dependent upon IT. (DODD 5000.59) *A model is a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. A simulation is a method for implementing a model over time. Also, it can be a technique for testing, analysis, or training in which real-world systems are used, or where real-world and conceptual systems are reproduced by a model.*

Modification— A change to a system that is still in production. A "major modification" is a modification that in and of itself meets the criteria of an ACAT I or II, or is designated as such by the MDA.

Multiservice Operational Test and Evaluation (MOT&E)— OT&E conducted by two or more services on systems to be acquired by more than one service or to be interoperable between services.

Objective— An operationally significant increment above the threshold. An objective value may be the same as the threshold when an operationally significant increment above the threshold is not identifiable (CJCSI 3170.01H and AFI 10-601).

Operating Command— The command primarily operating (using) a system, subsystem, or item of equipment. Generally applies to those operational commands or organizations designated by HQ USAF to conduct or participate in operations or operational testing. (AFI 10-601)

Operational Assessment (OA)— Analysis of progress toward operational effectiveness and suitability made by an independent operational test activity, with user support as required, on other than production systems. Additionally, AFOTEC assess progress toward overall mission capability. The focus of an operational assessment is on significant trends noted in development efforts, programmatic voids, areas of risk, adequacy of requirements, and the ability of the program to support adequate operational testing. Operational assessments may be made at any

time using technology demonstrators, prototypes, mockups, engineering development models, or simulations, but are substitute for the independent OT&E necessary to support full production decisions. An OA conducted before MS B is referred to as an EOA.

Operational Capability (OC)— An OC is a system attribute or grouping of attributes that users and subject matter experts have identified as being crucial to the achievement of critical mission elements and/or operational objectives and are, therefore, of significant value to the warfighter.

Operational Concept— A statement about intended employment of forces that provides guidance for posturing and supporting combat forces. Standards are specified for deployment, organization, command and control, basing, and support from which detailed resource requirements and implementing programs can be derived.

Operational Effectiveness— The overall degree of mission accomplishment of a system when used by representative personnel in the environment planned or expected (e.g., natural, electronic, threat) for operational employment of the system considering organization, doctrine, tactics, survivability, vulnerability, and threat (including countermeasures, initial nuclear weapons effects, and nuclear, biological, and chemical contamination threats).

Operational Suitability— The degree to which a system can be placed satisfactorily in field use with consideration given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, safety, human factors, manpower supportability, logistics supportability, natural environmental effects and impacts, documentation, and training requirements.

Operational Test (OT) Activity— Refers to all OT&E as well as OA, EOA, OUE, and test support for ACTD, battlelab and other innovation programs.

Operational Test Agency (OTA)— Each Service has one designated operational test agency: the Air Force has the AFOTEC; the Navy has the Operational T&E Force; the Army has the Army T&E Command; and the Marine Corps has the Marine Corps Operational T&E Activity. The command or agency designated in the PMD or other appropriate program directive as responsible for managing the independent OT&E of a system.

Operational Test and Evaluation (OT&E)— The field test, under realistic combat conditions, of any item of (or key component of) weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability of the weapons, equipment or munitions for use in combat by typical military users, and the evaluation of the results of such test. (USC, Title 10, Chapter 4 §139, *Director of Operational Test and Evaluation*)

Operational Test and Evaluation (OT&E) Construct— The OT&E Construct is a model that identifies the elements of an operational test and the relationship of the individual elements to each other. The elements of an OT&E Construct include: the mission statement, COI, OC, OC requirements, conditions, measures (measures of effectiveness and measures of suitability, or TES/TEMP measures), criteria (user established or identified standards), and data. The OT&E Construct is typically summarized and depicted in the form of an Evaluation Summary Chart for presentation although other views are developed to capture all aspects of the OT&E Construct.

Operational Utility Assessment (OUA)— OUAs are used to determine operational utility in support of assessments conducted on innovation programs. An OUA is planned, conducted, and reported by adapting the OT&E construct to the technology being assessed.

Operational Utility Evaluation (OUE)— OUEs are evaluations conducted to demonstrate or validate new operational concepts or capabilities, upgrade components, or expand the mission or capabilities of existing or modified systems. OUEs **are not** used when IOT&E, QOT&E, or FDE are required or are more suitable.

Operations Security (OPSEC)— A process of identifying critical information and analyzing friendly actions attendant to military operations and other activities to:

Identify those actions that hostile intelligence systems can observe.

Determine indicators hostile intelligence systems might obtain that could be interpreted or pieced together to derive critical information in time to be useful to adversaries.

Select and execute measures to eliminate or reduce to an acceptable level the vulnerability of friendly actions to exploitation by adversaries. (Joint Pub 1—02)

Oversight Program— An acquisition program on OSD's T&E Oversight List that is published by OSD. Generally, the list includes ACAT I (MDAP) programs, ACAT II (major system) programs, and any other program designated for T&E oversight. The master list designates oversight for three types of testing: DT&E, OT&E, and LFT&E. These programs require some additional documentation, and have additional review and approval requirements. (DODI 5000.02)

Parameter— Any set of physical properties whose values determine the <u>characteristics</u> or behavior of something (i.e., parameters for atmosphere are temperature, pressure, and density).

Performance— Those operational and support characteristics of the system that allow it to effectively and efficiently perform its assigned mission over time. The support characteristics of the system include both supportability aspects of the design and the support elements necessary for system operation.

Program Executive Officer (PEO)— A military or civilian official who has primary responsibility for directing several ACAT I programs and for assigned ACAT II and III programs. PEOs review and assess changes reported in assigned programs, the significance of the problems reported by the program manager, the program manager's proposed action plans, and the level of risk associated with such plans. PEOs also serve as decision authorities for assigned programs. A PEO has no other command or staff responsibilities within the component, and only reports to and receives guidance and direction from the DoD component acquisition executive.

Program Management Directive (PMD)— The official Air Force document used to direct acquisition or modification responsibilities to the appropriate MAJCOM, PEO, or DAC for a specific system and subsystem's development, acquisition, concept direction study, or modification. The PMD states the program's unique requirements, goals, and objectives, especially those to be met at each acquisition MS or program review.

Program Manager (PM) (external to AFOTEC)— The individual designated by the implementing command as having single-point management responsibility for an acquisition program. The program director may delegate specific program authority to SPO staff members as long as the authority is documented in management instructions or official correspondence.

Program Manager (PM) (AFOTEC/A—3/A-3Z) — The AFOTEC PMs are HQ staff POCs for AFOTEC programs throughout the life of a program. They have a wide-range of responsibilities depending where assigned in AFOTEC/A-3. Responsibilities range from tracking programs prior to formal involvement determination and staff POC for requirements document reviews, HPT participation, test design activities, test plans and test reports.

Prototype— A model suitable for evaluation of design, performance, and production potential. (Joint Pub 1-02) The Air Force also uses prototypes during development of a technology or acquisition program for verification or demonstration of technical feasibility. Prototypes may not be representative of the final production item.

Qualification Operational Test and Evaluation (QOT&E)— The operational testing performed on programs instead of IOT&E for which there is no RDT&E-funded development effort.

Readiness— The ability of a system to deploy and employ without unacceptable delays and to deliver the output for which they were designed. (Joint Pub 1-02)

Recoverability— Following combat damage, the ability to take emergency action to prevent loss of the system, to reduce personnel casualties, or to regain weapon system combat mission capabilities. Recoverability is considered a subset of survivability.

Reliability— The ability of a system and its parts to perform its mission without failure, degradation, or demand on the support system.

Responsible Test Organization (RTO)— The lead government entity that is qualified and responsible for DT&E.

Risk— A measure of the inability to achieve program objectives within defined cost and schedule constraints and has two components: 1) the probability of failing to achieve a particular outcome, and 2) the consequences of failing to achieve that outcome.

Risk Management (RM)—Risk management is a decision-making process to systematically evaluate possible courses of action, identify risks and benefits, and determine the best course of action for any given situation. RM enables commanders, functional managers, supervisors, and individuals to maximize operational capabilities while limiting all dimensions of risk by applying a simple, systematic process appropriate for all personnel and functions both on- and off-duty. Appropriate use of RM increases both an organization's and individual's ability to accomplish their mission, whether it is flying an airplane in combat, loading a truck with supplies, planning a joint service exercise, establishing a computer network, or driving home at the end of the day. Application of the RM process ensures more consistent results, while RM techniques and tools add rigor to the traditional approach to mission accomplishment, thereby directly strengthening the Air Force's warfighting posture.

Service Acquisition Executive (SAE)— A single official within a DoD component who is responsible for all acquisition functions within that component.

Single Manager— A government official (military or civilian) responsible and accountable for decisions and overall management (to include all cost, schedule, performance, and sustainment) of a system, product group, or materiel group. Also known as system program director, program manager, product group manager, or materiel group manager.

Suitability— See Operational Suitability.

Staff POC— The staff POC is responsible for the coordination of a product within the HQ and external agencies, as applicable; adjudicating HQ and external comments to a product, as applicable; staffing in TMT for appropriate 2-Ltr and AFOTEC/CS coordination, and modifying the product for final signature and subsequent publishing.

Supportability— The degree to which system design characteristics and planned logistics resources, including manpower, meet system peacetime readiness and wartime utilization requirements.

Supporting Command— The *command* (usually Air Force Materiel Command) responsible for providing logistics support for a system. (AFI 21-102, *Depot Maintenance Management*)

Survivability— The capability of a system and its crew to avoid or withstand man-made hostile environments without suffering an abortive impairment of its ability to accomplish its designated mission. Survivability is comprised of susceptibility, vulnerability, and recoverability.

Susceptibility— The degree to which a weapon system is open to effective attack due to one or more inherent weaknesses. (Susceptibility is a function of operational tactics, countermeasures, and probability of the enemy fielding a threat.)   Susceptibility is considered a subset of survivability.

Sustainment— Activities that sustain systems during the operations and support phases of the system life cycle. Sustainment activities include any investigative T&E that extends the useful military life of systems, or expands the current performance envelope or capabilities of fielded systems. Sustainment activities also include T&E for modifications and upgrade programs, and may disclose system or product deficiencies and enhancements that make further acquisitions necessary. The T&E conducted during sustainment follows the same guidance as for the T&E conducted during the acquisition process.

System Threat Assessment (STA)— A document prepared by the intelligence community that serves as the single authoritative reference for man-made threat data regarding an ACAT II or III program. It describes the lethal and non-lethal threats against the proposed system and the threat environment in which the system operates.

System Threat Assessment Report (STAR)— A document prepared by the intelligence community that serves as the single authoritative reference for man-made threat data regarding an ACAT I program. It describes the lethal and non-lethal threats against the proposed system and the threat environment in which the system operates.

Tactics, Techniques, and Procedures (TTP)— The Air Force Operational TTPs (AFOTTP) provides guidance for the planning and execution of aerospace operations across the spectrum of conflict. AFOTTPs describe, in detail, how to formulate the theater's aerospace strategy and then translate it into an executable order.   The series also discusses the integration and employment of aerospace capabilities at the operational level of war. Tactical TTPs applies basic and operational doctrine to military actions by describing the proper use of specific weapon systems or detailed TTPs, to accomplish specific military operations.

Targets, Threats, and Ranges— Target. An aircraft, ship, or ground vehicle that emulates the signature, performance, and vulnerability of a threat weapon system when engaged by US sensors and weapons. **Note:** Targets may be many other things besides emulations of a weapon system that are engaged by sensors and weapons.   While the issues of accurate signature,

performance and vulnerability are necessary; the definition must be broad enough to include anything planned for surveillance or attack with the system under test, e.g., bridges, bunkers, runways, C4I nodes, SAM sites, or factories. Attacks do not have to use lethal force, but may include jamming and other non-lethal means. Similarly, not all targets are "attacked" in the literal sense, i.e., surveillance. A reconnaissance asset (unmanned aerial vehicle, KH-xx satellite, Joint Surveillance Target Attack Radar System) may photograph or image a target in some other way without employing weapons.

Threat Representation. Simulator, target, or model used to represent opposing weapon systems.

Ranges.   Instrumented open—air ranges that permit tests in a real-world, dynamic environment, e.g., Naval Air Weapons Center/China Lake, Nellis Open Air Range, or White Sands Missile Range.

Tasking Order (TO)— Developed by AFOTEC/A-3 and approved by AFOTEC/CC, the TO details those products and services provided by the Det/evaluation team/special test, as determined by the initial test design. The TO has enough detail to supply the TRP and the draft TEMP. The TO is coordinated as a package that includes an initial/updated TRP and the program's requirements review board slides.

Technical Order (T.O.)— An AF publication that gives specific technical direction and information concerning inspection, installation, operation, safety modification, and maintenance of Air Force items and equipment.

Technical Adequacy— Addresses the **<u>relevance</u>** of the technical information produced by the test in relation to the purpose of the test (i.e., the operationally relevant questions being addressed by the test activity). A test is technically adequate if the test data evaluation provides the user/warfighter with sufficient information to make fielding and employment decisions. The purpose of the test, the set of test events, and the type of test are important considerations, as well as data collection during test events executed across a representative range of battlespace conditions for the system under test.

Test and Evaluation (T&E)— The term "test" denotes any project or program designed to obtain, verify, and provide data to evaluate, research, and develop; progress in accomplishing development objectives; performance and operational capability of systems, subsystems, and components; and equipment items. The term "evaluation" denotes the review and analysis of data produced during current or previous testing and data obtained from test conducted by other government agencies and contractors, from operation and commercial experience, or combinations thereof.

Test and Evaluation Master Plan (TEMP)— The basic planning document for all T&E related to a particular system acquisition and used in planning, reviewing, and approving T&E. The TEMP is required for all major defense acquisition programs, all OSD T&E oversight programs, all HQ USAF programs directed by a PMD, and may be required for an OSD-directed information system program.   The TEMP integrates critical issues, associated measures (MOE/MOS), evaluation criteria, system characteristics, responsibilities, resources, and schedules for T&E.

Test Data Scoring Board (TDSB)— Government-only forum that compiles, reviews, and scores R&M data to be used in OT&E computations.

Test   Director   (TD)—   The   Det-designated   person   responsible   for leading/coordinating/completing test activities in the OT Planning, OT Execution, OT Reporting and OT Close Out phases.

Test Readiness Review (TRR)— A review by the program's management structure, including the TD, AFOTEC/CC or designated approval authority, and other concerned participants. The purpose of the TRR is to determine that the test team is ready to execute the test plan.

Test Resource Plan (TRP)— The basic resource management document used throughout the OT&E planning process. It identifies resources required to support testing and is the basis for budget submissions, manpower plans, and procurement lead-time.

Test Team— The group assigned to the TD for the purposes of planning, executing, and reporting the OT&E. The test team is part of the core team for the program.

Threshold— A minimum acceptable operational value for a system capability or characteristic below which the utility of the system becomes questionable. The minimum acceptable value that, in the user's judgment, is necessary to satisfy the need. If threshold values are not achieved, program performance is seriously degraded, the program may be too costly, or the program may no longer be timely. The spread between objective and threshold values shall be individually set for each program based on the characteristics of the program (e.g., maturity, risk).

Transportability— The capability of materiel to be moved by towing, self-propulsion, or carrier via any means such as railways, highways, waterways, pipelines, oceans, and airways. (Joint Pub 1-02)

User Requirement— Operational requirement.

Verification, Validation, and Accreditation— 1) Verification: The process of determining that a model or simulation (or other test capability) implementation accurately represents the developer's conceptual description and specifications. For model and simulation, verification also evaluates the extent to which the model and simulation has been developed using sound and established software-engineering techniques. 2) Validation: The process of determining a) the manner and degree to which a model and simulation (or other test capability) is an accurate representation of the real-world from the perspective of the intended uses of the model and simulation, and b) the confidence that should be placed on the assessment. 3) Accreditation: An official determination that a model or simulation is acceptable for a specific purpose, and is based on a five-step process: identify test issues; review validation documentation; compare test capabilities and validation information with test issues; identify potential shortfalls; and develop and execute strategy to address shortfalls (assess risk).

Virtual—STAR (VSTAR) — A VSTAR is an OSD methodology for developing or updating

Vulnerability— The characteristics of a system that cause it to suffer a definite degradation (loss or reduction of capability to perform the designated mission) as a result of having been subjected to a certain level of effects in an unnatural (man-made) hostile environment. Vulnerability is considered a subset of survivability. (Joint Pub 1-02).